ADDISONIA

COLORED ILLUSTRATIONS

AND

POPULAR DESCRIPTIONS

OF

PLANTS

VOLUME 23

1954–1959

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ANNOUNCEMENT

A bequest made to The New York Botanical Garden by a former President, Judge Addison Brown, established the

ADDISON BROWN FUND

"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonymy, and a brief statement of the known properties and uses of the plants illustrated."

The preparation and publication of the work has been referred to Mr. Edward Johnston Alexander, Associate Curator.

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DOMBEYA CAYEUXII

(Plate 737)

DOMBEYA CAYEUXII

Of Hybrid Origin

Family STERCULIACEAE — CHOCOLATE Family

Dombeya Cayeuxii Andre, Revue Horticole **69**:545, with plate. 1897.

Members of the Chocolate Family being mostly tropical, they are not much used for outdoor plantings in the United States, and indeed are very little known even in greenhouses. They are however, eminently suited for lawn and park plantings in Florida and southern California, where in fact the Bottle-trees (*Brachychiton*) are commonly used in park and street plantings. *Firmiana simplex,* the Chinese Parasol-tree is frequently used in lawn and park plantings in the southeastern states, where it has a tendency to escape into nearby areas. *Dombeya* is little known horticulturally, yet among its approximately one hundred species are many fine ornamentals which are deserving of attention. One of the finest is *Dombeya Cayeuxii,* with large, hairy, maple-like leaves and drooping, long-stalked heads of pink flowers. This plant, which originated from a cross between the pendulous red-flowered *D. Wallichii* and the upright white-flowered *D. Mastersii,* made in the Botanical Garden of the National Museum of Lisbon, Portugal in 1895 by its Chief Horticulturist, Henri Cayeux, first flowered in 1896, and the following year was illustrated and named in Revue Horticole, its originator being honored in its name. It is frequently seen as a lawn or park specimen in southern California and in the French Riviera.

The genus *Dombeya* was named in honor of Joseph Dombey, a French botanist of the eighteenth century.

Dombeya Cayeuxii is a large shrub to twenty feet in height with rough-hairy branches which are green in youth and become brown with age. The leaves are very numerous, bright green, both blades and petioles covered with short, stiff hairs. The petioles are three to six inches long, with two triangular, wavy-margined and long-pointed stipules at the base: the blades are six to eight inches long and four to six inches wide, heart-shaped at the base, the margins with sharp unequal teeth and often with shallow, angulate lobes. The flowers are borne in a head at the end of six to eight inch-long, drooping stalks. The involucral bracts at the base of the head are oblong and pointed, five to eight in number, and one-half to three-fourths inch long. The individual flower stalks are three-fourths to an inch long. The sepals are pale silvery green in color and very thin in texture, narrowly lance shaped, about one-half

inch long. The petals are five in number, bright pink becoming whitish towards the base: they are oblong but oblique on one side, three-fourths to an inch long. The stamens and staminodes are united into a tube about one-half inch long. The tube, filaments and staminodes are greenish white, the staminodes hairy-margined, the anthers bright yellow. The pistil is about three-fourths inch long, with five recurved stigmas, the ovary rotund and bristly-hairy.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—A leaf and portion of stem. Fig. 2.—An inflorescence. Fig. 3.—A petal. Fig. 4.—Staminal tube, laid open, showing stamens and staminodia × 4. Fig. 5.—Gynoecium and calyx × 1½.

SPATHIPHYLLUM FLORIBUNDUM

(Plate 738)

SPATHIPHYLLUM FLORIBUNDUM

Native of Northwestern Colombia

Family ARACEAE — ARUM Family

Anthurium floribundum Linden et André, Ill. Hortic. **21**:24. pl. 159. 1874.
Amomophyllum floribundum Engl. Gard. Chron. **10**:139. 1877.
Spathiphyllum floribundum N. E. Br. Gard. Chron. **11**:783. 1878.

No other group of plants is more curious than the aroids, and probably no other is better represented among our cultivated stove plants, which include the philodendrons, anthuriums, "pothos," chinese evergreen, *Monstera,* and scores of others not so well known. That a majority of this group are native to tropical America is a well-established fact, and for a century they have been much sought-after to enhance already rich collections of exotic plants. The aroids are recognized by their distinctive blossoms, which consist of a central column (spadix) densely covered with many small and inconspicuous flowers, this subtended by a bract (spathe) which may be spreading, as in our illustration, or else rolled and inclosing the flower column.

Very many of the aroids have handsome leaves, while the blossoms are entirely without beauty; these types are used as foliage plants. But notable exceptions are found among the genera *Anthurium* and *Spathiphyllum,* several species of which have a large and attractive bract subtending the column of flowers. Our plant is of this latter group, and indeed, its chief attraction is its blossoms, which are produced freely throughout the year. The foliage is in no way remarkable, but serves to enhance the beauty of a specimen with many flowers. Since only a single flower stalk is produced at any one time from each stem, it is desirable to have several growing points in order to obtain the finest specimen. A good, porous soil, constant soil moisture, moderate shade, a humid atmosphere, and warm temperatures are the only cultural requirements to be satisfied.

It seems quite certain that *Spathiphyllum floribundum* was first collected by Gustav Wallis in the western cordilleras of northwestern Colombia, during that period prior to 1868 when he was exploring northern South America in search of new plants for the business establishment of M. Linden of Brussels. But in the original description of this species in "Illustration Horticole" in 1874, under the name *Anthurium floribundum,* André gave no data concerning its arrival in Europe,

stating only that the description was prepared from a plant growing in the garden of M. Linden for the previous two years, and delayed in publication by lack of sufficient flowers to determine in which genus it should be placed. However, in the "Hamburger Garten" in 1875, Mr. Wallis, then in the employment of James Veitch of London, listed *A. floribundum* among his collections near San Carlos (Aquas Claras), New Grenada (Colombia), mentioning that many of these same species were previously collected for M. Linden. Since our plant had been in Linden's garden for some years already, it is most seeming that it was Wallis who first collected it, likely in the same locality. It was not until 1878, when N. E. Brown studied this species in relation to several other closely related ones, that it was placed without further question in the genus *Spathiphyllum*.

The name *Spathiphyllum* is derived from the Greek words meaning "spathe" and "leaf."

Spathiphyllum floribundum is an herbaceous perennial with erect leaves arising from a very short stem, the plant thus appearing acaulescent. The leaf blade is about six inches long, and one to one and one-half inches wide at the widest point, rather coriaceous in texture, entire, obliquely oblong-elliptic or oblong-lanceolate, taper-pointed at the tip, obtuse or acute at the base, glabrous, bright green above and paler beneath. The midrib is thick and prominent, with about twenty pairs of primary lateral veins arising from it at a sharp angle, and extending toward the margins. The petioles are stiff and slender, equalling or slightly shorter than the blade, strongly sheathing in the lower two-thirds, and geniculate at the junction with the leaf blade. The new leaves and flower stalks arise from the unexpanded sheath of the petiole of the previous leaf, thus the oldest leaves are outermost. The inflorescence is borne on a slender peduncle eight to ten inches long. The spathe is white, rather flat and spreading, oblong-lanceolate, two to two and one-half inches long, taper-pointed at the tip, and narrowed at the base where it is connected about the peduncle. The spadix is shorter than the spathe, about one and one-half inches long, stipitate, cylindrical, about one-fourth inch in diameter, and densely covered with very small flowers, appearing greenish-yellow when the stamens are present, and white after these are lost. The ovary is obpyramidal, three-celled, the three or four-lobed stigma sessile on the convex upper surface. The perianth consists of six broad, truncate, coherent segments about one-sixteenth inch long, forming a cup about the ovary. The six stamens arise from between the perianth and ovary, and are slightly longer than the perianth. The fruits are six-seeded berries.

GEORGE S. BUNTING

EXPLANATION OF PLATE. Fig. 1.—An inflorescence. Fig. 2.—A leaf blade and part of the petiole. Fig. 3.—A section from the base of the spadix showing individual flowers. Fig. 4.—Two gynoecia. Fig. 5.—A gynoecium × 2.

NICOTIANA GLAUCA

(Plate 739)

NICOTIANA GLAUCA

Tree Tobacco

Native of Argentina

Family SOLANACEAE — POTATO Family

Nicotiana glauca Grah., Edinb. New Phil. Jour. **5**:175. 1828.

Throughout the southwestern United States, from California to central Texas, one is apt to find in river bottoms, dry streamways, arroyos, and open canyon mouths a small tree up to fifteen feet high that is marked by its cabbage-like blue-green leaves and terminal panicles of yellow or somewhat greenish yellow flowers. It is likely to be found in flower because it has a very long blooming period; in fact, in southern California it is in bloom all but the winter months. This is the tree tobacco or Mexican tobacco as it is sometimes called, *Nicotiana glauca.*

According to Goodspeed, the authority on the tobaccos, this species is growing native only in northwestern Argentina, although it has been introduced and is now widely naturalized elsewhere. In the United States, where it is most abundant in southern California and less so eastward to southern Texas, it has also been introduced into Florida and Alabama along the Gulf Coast. In Mexico it is widespread, extending from Lower California to Tamaulipas and as far south as Oaxaca. In parts of the country it is very abundant, and one reason for its spread is that the Mexican resident often cultivates it as a dooryard plant. Presumably it was established in Mexico before its advent to the United States. It has been stated by S. B. Parish that tree tobacco was introduced into California during the mission period by Mexicans who brought it as a garden shrub. From the mission sites it was carried elsewhere and has since run wild as an escape at low elevations throughout southern California to the borders of the desert and northward, particularly through the Coast Range valleys and along the western side of the Great Valley, to the Sacramento Valley as far north as Yolo and Butte counties.

It is remarkable that this prominent plant was not listed in any California flora before 1894, but this is accounted for by the very few early records of it. The earliest dated California collection at The New York Botanical Garden was made in San Diego in 1882, and Jepson cites none so early in his Flora of California. The earliest collections at the Garden from the United States are one from Laredo, Texas, in 1881, and one sent in by a New Yorker in 1880 with an accompanying letter asking the name of the plant which "has been introduced into Texas from California, it is said, under the name *'Eucalyptus globosus'*." The fast growing shoots of tree tobacco and *Eucalyptus globulus* bear

a slight resemblance to each other becausee of the thick, ovate, blue-glaucous leaves, but this explanation for the present occurrence of tree tobacco in Texas may be discounted. Mohr records that *N. glauca* was growing in Florida as early as 1872.

Nicotiana glauca is reputed to be very poisonous, particularly in the leaves, but stock regularly avoid it. Standley, in his "Trees and Shrubs of Mexico," reports that the leaves are often applied as poultices to relieve pain, especially headache, and in this publication he lists twenty Mexican colloquial names for the plant.

On sandy flats where moisture is available, as on flood plains of rivers, *Nicotiana glauca* readily forms rather dense stands or thickets. Small boys sometimes enjoy pushing through such thickets and breaking down these fifteen-foot trees, for the trunks contain a very wide pith and a mere rim of wood, so that they are much more easily broken off than their stout appearance would indicate.

Like the other tobaccos, this plant produces copious quantities of minute seeds that well may number over a million a year in an adult plant. Thus tree tobacco carries ample insurance on its chances for survival, although fortunately germination is not at all commensurate with the size of the seed crop!

The genus *Nicotiana* has been placed by Wettstein in the Tribe Cestreae, Subtribe Nicotianinae. Here it finds company with the petunias. *Nicotiana glauca* has a flower much like that of a *Cestrum,* and it is morphologically somewhat apart from the other species of its subgenus, none of the members of which produce the tobaccos of commerce.

Nicotiana glauca is an evergreen shrub or small tree six to fifteen feet high, with rather heavily scented blue-glaucous herbage and pithy green sparingly and loosely branched stems that become outwardly woody toward the base. The leaves are thick and rather leathery in texture, elliptic or ovate, obtuse or acute, rounded at base, two to six inches long, up to four inches wide, on petioles about half as long. The flowers are borne erect in ten- to eighty-flowered panicles at the ends of the branches on one-half inch long peduncles that recurve sharply in fruit; each flower is subtended by a small linear bract that soon falls off. The calyx is thin, somewhat granular, sparingly puberulent about the five short teeth, mostly less than one-half inch long. The corolla is mostly an inch and a half long, greenish yellow, densely puberulent externally, the slender tube slightly expanding into the tubular throat just above the calyx, the throat contracted at summit in a ring just below the five-lobed limb, the lobes erect. The five stamens are included in the corolla, and their anthers turn inside out upon dehiscence. The pistil reaches the mouth of the corolla and barely exceeds the stamens. The fruit is a pendant brown ovate capsule containing quantities of minute seeds.

DAVID D. KECK

EXPLANATION OF PLATE. Fig. 1.—Top of a flowering stem. Fig. 2.—Portion of stem and a leaf. Fig. 3.—Calyx laid open, showing gynoecium. Fig. 4.—Corolla laid open, showing stamens. Fig. 5.—Fruit, enclosed in the persistent calyx.

EPIDENDRUM CONSPICUUM

(Plate 740)

EPIDENDRUM CONSPICUUM

Native of Eastern Brazil

Family ORCHIDACEAE ORCHID Family

Epidendrum conspicuum Lem. Ill. Hort. **16**, pl. 592. 1869.

In the vast assemblage of plants known as the Orchid Family, there are plants of all sizes which also bear flowers of all sizes, from the large showy florist's orchids down to flowers no larger than pinheads. They grow in almost every part of the world, from arctic regions to the tropics and under all sorts of climatic conditions, dry or wet. Many are epiphytic on trees, shrubs or even rocks, but there are also many which grow in soil. It is of course the ones with large or beautifully colored flowers that have been brought under cultivation and have given the layman his conception of orchids.

Of the five or six hundred species which comprise the genus *Epidendrum,* less than fifty have flowers of sufficient size or beauty to make them of horticultural value, the remainder have dull-colored or small flowers. The genus is entirely American, and in its natural range the various species extend from southeastern North Carolina to southern Brazil, the greater number being in the tropical regions as is the case with epiphytic plants. Of the two species which have large, clear pink flowers, the most attractive is *E. erubescens* from southern Mexico, which has not proved very amenable to cultivation. The other, our present subject, has proved more satisfactory and has remained in cultivation from the date of its discovery in 1869 to the present time. It appears, however, to be rather uncommon in the trade and few collections contain it. This is rather to be regretted, as its flowers, though scentless, are very attractive in their full development of an arching raceme, drooping at the end from the weight of flowers. Since it comes from an exceedingly warm region in the neighborhood of Bahia, in Brazil, it requires the temperature of a stove house to grow at its best, but thus treated, it rivals the more popular *Phalaenopsis Schilleriana.*

Epidendrum conspicuum is an epiphytic plant propagating by a successive series of pseudobulbs. The pseudobulbs are fusiform, membranous sheathed, two-jointed, three and a half to four and a half inches long, and bear at the tip two narrowly elliptic leathery leaves six to eight inches long. The flower stalk is terminal, slender, eighteen to twenty inches long, arching,

with a few brown, papery bracts. The four to twelve rose-pink flowers borne at its end are two inches in diameter, the sepals and petals broadly spreading. The sepals are narrowly spoon-shaped, equal in length to the round-ovate, short-stalked petals. The lip is three-parted, its lower part yellowish and enclosing the column; the two strap-shaped lateral lobes recurved, thus exposing the column-tip; the middle lobe rotund or slightly notched, deep rose becoming yellowish at the base, and with a narrow white margin. The column is yellowish white, grooved on the face and with a prominent incurved tooth at each side of the anther-sac. The ovary is reddish wine-color.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Pseudobulb and leaves, showing base of the flower-stalk × 2/3. Fig. 2.—Spray of flowers. Fig. 3.—The column × 2. Fig. 4.—Pollinia × 4.

HAWORTHIA CUSPIDATA

(Plate 741)

HAWORTHIA CUSPIDATA

Native of South Africa

Family LILIACEAE LILY Family

Haworthia cuspidata Haw. Suppl. Pl. Succ. 51. 1819.
Aloe cuspidata Schult. f. Syst. 7:639. 1829.

It is interesting to note that among succulent plants, which are so eminently suited for house plants in city apartments where the air is so dry as to make the growing conditions those of a desert, the most satisfactory ones are those whose native home is in the Southern Hemisphere. This is as true among cacti as it is among other succulents. The majority of desert plants require sunlight to make normal growth, and since in many homes and especially in apartments, sunlight is not always available, plants which are able to live and grow without it must be sought. One of the answers may be found in the genus *Haworthia*, native to South Africa, with about one hundred species, nearly all of them small plants especially suitable for pot culture. They also show a dislike for strong sunlight, for when grown in it their leaves become yellowish or reddish, even to the extent of being burned. When grown in a situation where only morning sunlight or none at all reaches them, they make better growth and retain their natural green color. They should, however, receive good light, so that they prove very satisfactory in east or north windows. Most of them form stiff rosettes, of various shades of green, some make stiff columnar growth six to eight inches high. In some the leaves are smooth, often with bristly or toothed margins and frequently with translucent tips; in others the leaves are covered, especially on the under or outer side, with white warts or tubercles, which are usually in bands, giving the plants an attractive appearance.

In cultivation, they grow best in a soil consisting of three parts good loam and one part sand, with a small amount of well-rotted leaf-mold. After transplanting they should be watered once and then kept dry for about two weeks, after which normal watering may be done, the normal being a good wetting every third or fourth day. During the months of June, July and August, they are dormant and at that time should be watered only once a week. Good drainage is essential at all times. Neither ornamental pots with glazed surface, nor porcelain "planters" are satisfactory for cacti or succulents, because the drainage

is either poor or completely lacking, and under this condition the roots will rot off, and the plant must be cleaned of the dead material and re-rooted in clean sand if it is to be saved.

The genus *Haworthia* was named in honor of Adrian Hardy Haworth, English botanist of the nineteenth century, particularly noted for his studies and writings on succulent plants.

Haworthia cuspidata is an acaulescent, succulent perennial with a short thick stem and a tight rosette of leaves, from whose axils grow short branches which form new plants. By the growth of these offsets a dense mound-like colony of plants is formed: a large clump often forms in one year. The leaves are an inch to an inch and a half long, very tender and succulent, light bluish green, oblong in form, terminating in an abrupt bristle-like tip; they are keeled on the lower side and somewhat concave on the upper side, the tip bent into a somewhat truncate apex on the surface of which is an irregular series of translucent "windows." Full grown individual rosettes are two to two and one-half inches across. The inflorescence is a long-peduncled raceme, tinged pale reddish purple: in its lower parts are widely spaced, translucent ovate bracts with brownish midrib and pointed tip: the upper portion is flower-bearing, each flower subtended by a translucent bract a little longer than the pedicel. The flowers are about a half inch long, greenish white faintly tinged pinkish, the six linear perianth parts united at the base and connivent above, forming a tubular portion slightly inflated at the base, the free portions expanded into a slightly two-lipped form. The six stamens are about one-fourth inch long and are included within the perianth tube; their filaments are flattened and white, the anthers yellow. The stigma is obliquely capitate, with a short, stout style; the ovary columnar and three-lobed. The fruit is an oblong-cylindrical three-lobed capsule, with numerous irregularly shaped black seeds.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Flowering stalk. Fig. 2.—The basal rosette. Fig. 3.—Perianth laid open × 2. Fig. 4.—Androecium and gynoecium × 4.

FITTONIA ARGYRONEURA

(Plate 742)

FITTONIA ARGYRONEURA

Native of Andean Peru and Bolivia

Family ACANTHACEAE — ACANTHUS Family

Fittonia argyroneura E. Coëm. Fl. des Serres ser. 2, **16**:103. 1865-67.
Fittonia Verschaffeltii var. *argyroneura* Nichols. Ill. Dict. Gard. **2**:16. 1884.

Plants with colorful leaves have long been popular subjects for decorating our conservatories. Especially in recent years, many species have been found satisfactory for use in the home, and in public buildings, in spite of the fact that most of them are natives of the tropics. Among this group of plants which have attracted interest because of their showy leaves, our subject is indeed outstanding. Introduced into Europe almost a century ago, *Fittonia argyroneura* is as popular today as ever. Its main attraction is its bright green leaves which are filigreed by white veins, hence the specific name *argyroneura,* from the Greek words meaning "silver nerve."

Some authors have seen fit to consider this species as a variety of its close relative, the red-veined *F. Verschaffeltii,* but close observation of the upper epidermis of the leaf of each type reveals differences sufficient to warrant specific distinction. *F. Verschaffeltii* has dull green, often slightly yellowish, leaves, the upper surface covered with large, projecting cells appearing almost velvety when viewed under a magnifying lens, while our subject has a shiny upper surface sparingly covered with conical, glandular hairs that are swollen at the base. Though this difference is small, it is no less real.

Fittonia argyroneura was introduced, apparently, by Mr. William Bull, of Chelsea, England, for in the original description in "Flore des Serres" (1865-67), Mr. Coëmans acknowledged receipt of a specimen from Mr. Bull, but gave no information concerning its origin, save the single word "Para," which appears on the accompanying plate. It seems probable that this species was first brought from Peru by an expedition sent out by Mr. Bull for the sole purpose of procuring new and interesting plants for sale by his business establishment.

In the conservatory, fittonias can hardly be surpassed for their beauty when used as a ground cover, particularly under larger specimens where much soil moisture and heavy shade are available. Planted on a mound in the center of a container, the almost horizontal branches grow in

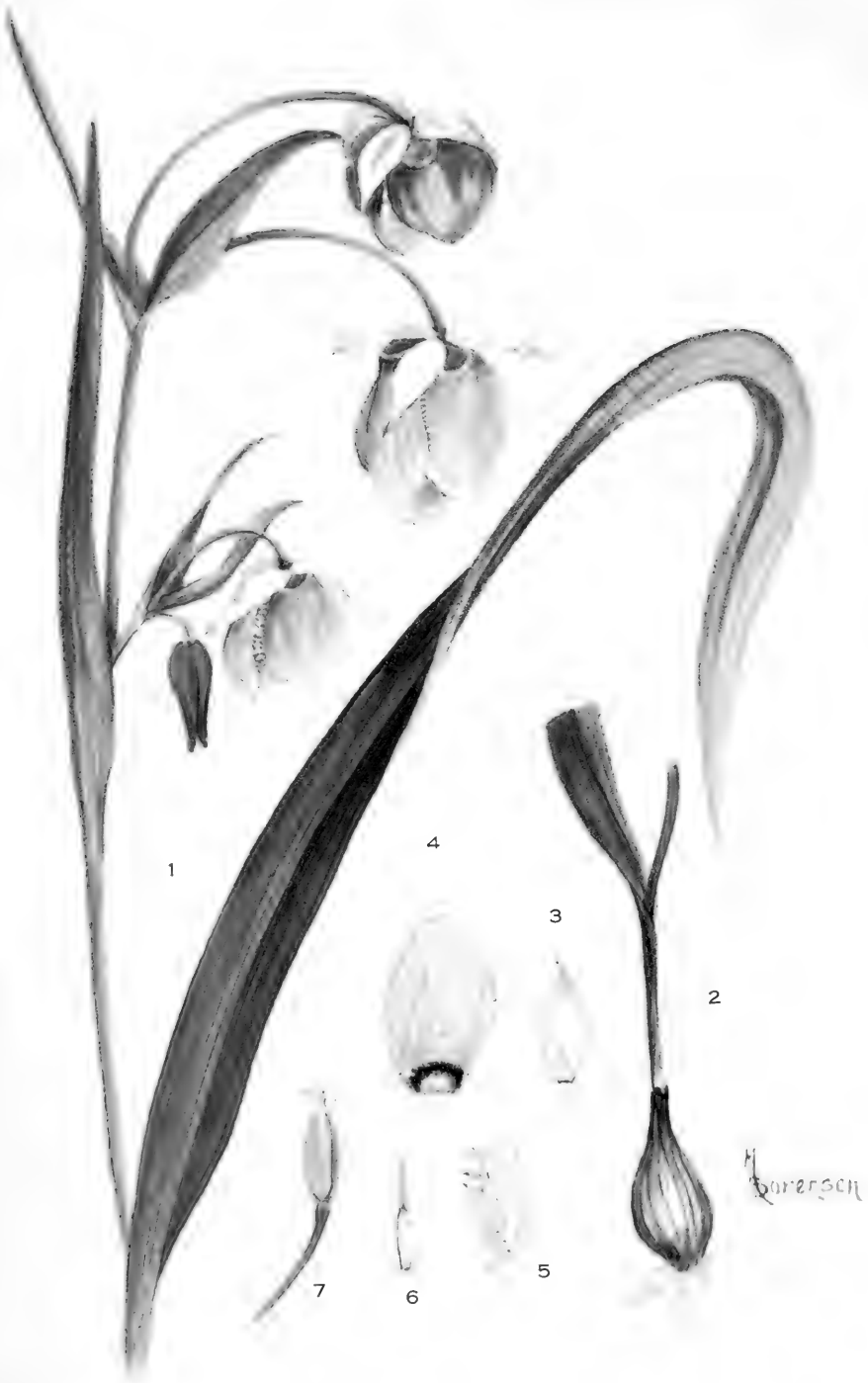
close contact with the soil, turned up only at the tips, and form a pyramid of great beauty. These species are especially desirable for use in large terraria, and have been satisfactory as pot plants, especially in combination planters.

The genus *Fittonia* was so named to honor Elizabeth and Sarah Mary Fitton, authors of "Conversations on Botany," which first appeared in London in 1817.

Fittonia argyroneura is a low, creeping herb, its square, much-branched stems soft-hairy, especially along the angles. The leaves are opposite, simple and entire, three to four inches long, and elliptic-ovate to ovate in outline, rounded at the tip and cordate at the base. The upper surface is bright green and shiny, somewhat reticulated by the sunken midrib and lateral veins, which are silvery-white; they are paler green beneath, the veins green and pubescent. The petioles are about one inch long, rather three-angled, soft-hairy along the angles, pink-purple above and green beneath. The inflorescence is a spike, borne terminally on a simple or branched short peduncle that is reddish, and covered with glandular hairs. The spikes are to five inches long, consisting predominantly of green, rotund, bracts arranged in four vertical ranks, and covered with glandular hairs, each bract subtending a single flower. The calyx is deeply five-cleft, the sepals very narrow, pubescent, and more or less equal. The ovary is two-celled and very small. The corolla is strongly bilabiate, about one-half inch long, downy on the outside, pale yellow, marked with maroon on the central lower limb and in the throat, the stamens inserted at the middle of the tube. Only one or two flowers open at a time, and these last for only a day, thus having little ornamental value.

GEORGE S. BUNTING

EXPLANATION OF PLATE. Fig. 1.—A vegetative shoot. Fig. 2.—An inflorescence.



CALOCHORTUS AMOENUS

(Plate 743)

CALOCHORTUS AMOENUS

Native of California

Family LILIACEAE LILY Family

Calochortus amoenus Greene, Pittonia **2**:71. 1890.

Among the most beautiful representatives of the lily family in the western United States are the members of the genus *Calochortus*. The genus was first described by Frederick Pursh in 1814 to take care of a plant collected by Lewis and Clark in Idaho. The name *Calochortus* comes from the Greek and means beautiful grass, in allusion to the flowers and the long slender leaves.

The interest of the species to the layman is reflected in the colorful common names that have been applied to various groups of them, such as Mariposa Lily, Star Tulip, Fairy Lantern, Globe Lily, Cat's Ear or Pussy Ears, and Sego Lily. The Sego Lily, *Calochortus Nuttallii*, is, by the way, the state flower of Utah.

Many of the species come into bloom as the spring annuals are beginning to fade, and the great attractiveness of these plants lies in part in the striking grace with which the scattered individuals seem to dominate the surrounding vegetation, and in part in the unusual shapes and coloring of the showy flowers. These range from open cups to large bells or to much smaller hollow globes that are essentially closed. Furthermore, the three inner perianth segments or "petals," which are always the more prominent of the two sets, may be most delicately pencilled or marked with a central blotch of color. In addition they are beset with a few colorful hairs in the mariposas and with very many in the cat's ears. Almost all species bear near the base of each petal a unique gland, which may be on the surface or sunken. This gland, which incidentally is not always nectariferous, offers the most critical characters for the distinction of the species in this genus.

The fine monographic treatment of the genus by Ownbey in 1940 lists fifty-seven species. These occur in western North America from southern British Columbia to Guatemala and eastward to the Dakotas. Over 50 per cent of the species are found in California, the area of their greatest concentration. In that state they are found in a wide range of habitats from desert floors up to timberline in the Sierra Nevada.

With due care a number of species of *Calochortus* may be success-

fully cultivated, but they are much more delicate in habit than their close relatives, the tulips, and they rarely multiply under garden conditions. Their short life in the garden also contributes to their scant popularity with gardeners, but it is probable that their horticultural possibilities have scarcely been adequately tested as yet.

Calochortus amoenus is one of the rarer endemic species in the genus. It occurs in a limited region in the foothills on the western flank of the Sierra Nevada in California from Madera County southward to the Greenhorn Mountains in Kern County, at elevations up to 3500 feet. Here it is found blooming in April and May on grassy savannas in the *Pinus Sabiniana-Quercus Douglasiana* belt where it grows with such annuals as *Layia pentachaeta* and *Rigiopappus leptocladus*. Although this species was not described before 1890, a specimen in the herbarium of the New York Botanical Garden shows that it was being grown from California bulbs in 1855.

Calochortus amoenus is one of the fairy lanterns, so called because of the graceful open panicle of nodding globe-shaped flowers. In this species these are striking because of their color, which has been variously described as deep rose, old rose-maroon, wine-purple, and rose-wine. The closest relative of *amoenus* is the white fairy lantern, *Calochortus albus,* which also has forms with the petals flushed with rose, but the two species are distinguished by the appendages of the gland as well as by the much more intensive color of *C. amoenus*.

Calochortus amoenus is a perennial herb with a leafy stem a foot or two high, branching above and arising from a deep-seated ovoid bulb less than one-half inch in diameter. The basal leaf may be eight to twenty-four inches long, usually exceeding the stem, and up to one inch wide, membranous, and strongly sheathing at base. The cauline leaves are alternate, about three in number, much reduced in size, and merely sessile, not differing in appearance from the paired lanceolate bracts which terminate the branches. The flowering pedicels arise from the axils of the cauline leaves and bracts and are slender and reflected. The globose-campanulate flowers, which become almost an inch long, are rose-purple, the gland being the most deeply colored. The sepals are somewhat shorter and narrower than the petals. The petals are elliptic-obovate, laterally ciliate, and bear a moderate number of long hairs on the inner face. The gland is broad, and is traversed by four or five deeply fringed arching membranes, the lowest of which extends entirely across the petal. The anthers are oblong, obtuse, one-eighth inch long, equaling in length the flattened filaments. The oblong capsule is narrowly 3-winged and nodding.

DAVID D. KECK

EXPLANATION OF PLATE. Fig. 1.—Top of a flowering stem. Fig. 2.—Base of same plant and bulb. Fig. 3.—A sepal. Fig. 4.—A petal. Fig. 5.—Edge of a petal showing hairs × 4. Fig. 6.—A stamen × 2. Fig. 7.—The gynoecium × 2.

SCABIOSA STELLATA

(Plate 744)

SCABIOSA STELLATA

Native of the Western Mediterranean Region

Family DIPSACACEAE TEASEL Family

Scabiosa stellata L. Sp. Pl. 100. 1753.

Sweet scabious or Pincushion flower has long been grown as a popular garden annual, the heads of flowers reminding one of a sort of double aster or anemone-flowered chrysanthemum. They come in a wide variety of colors, ranging from white through shades and tones of pink, lavender and purple, to a deep black-purple. Since the flowers are pleasantly scented and the heads are on long stalks, they are particularly satisfactory as cut flowers. The perennial kinds also are popular as border plants, where they make large, but neat clumps of gray-green foliage, above which rise their long-stalked heads of lavender blue or white; there are even one or two rarely seen kinds with light yellow flowers.

Our present subject is one of the annual kinds, but is rarely if at all grown, as its flowers are a rather dull, pale blue; but because it has such attractive seed heads, it is surprising that some enterprising grower has not made it more popular in these days when something new which may be used for decoration and in floral arrangements is being constantly sought for in the florist's field.

The name *Scabiosa* is derived from the Latin word meaning a sore, and was given to the genus in allusion to supposed medicinal qualities.

Scabiosa stellata is an herbaceous, bristly-hairy annual a foot to eighteen inches tall. The lower leaves are three to five inches long, spoon-shaped in outline, tapered at the base, the margins with blunt teeth irregular in size and placement. The stem leaves are pinnately divided, the apical divisions larger and slash-toothed. The peduncles are four to ten inches long, bearing at their top a flat head an inch to an inch and a half in diameter. The involucral bracts which surround the head are linear and numerous, of varying lengths. The outer florets are light gray-blue, about one-fourth inch long, irregularly shaped, the three lower petals larger and longer than the two short upper petals. The central florets are each subtended by a rounded translucent bract with a green midrib which protrudes beyond the colorless portion as a bristly spine: the floret is bluish white, about one-fourth inch long with a five-parted corolla and a short tube. The four stamens are longer than the flower, their anthers purplish pink. The style is long and slender, tipped by the capitate, purple stigma. The calyx is double, the outer one or

involucel is adnate to the inferior ovary and has a free, cup-shaped portion which enlarges in fruit into a circular, papery, strongly ribbed wing; the inner one or true calyx consists of five brownish-maroon, lance-shaped and stiffly pointed lobes which are persistent in fruit and appear as a center to the papery winged portion. The fruit is an ovoid, hairy achene crowned with the papery involucel and the calyx. The fruiting head is an inch to an inch and a half in diameter.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—A flowering stem. Fig. 2.—A basal leaf. Fig. 3.—A fruiting head. Fig. 4.—A seed. Fig. 5.—A bract of the receptacle.

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ADDISONIA

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AND
POPULAR DESCRIPTIONS
OF
PLANTS

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"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonymy, and a brief statement of the known properties and uses of the plants illustrated."

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APHELANDRA AURANTIACA ROEZLII

(Plate 745)

APHELANDRA AURANTIACA ROEZLII

Native of Vera Cruz, Mexico

Family ACANTHACEAE — ACANTHUS Family

Aphelandra aurantiaca Roezlii Ed. Ortgies ex Van Houtte, Flores des Serres **17**:53, *pl. 1741-2.* 1867-8.

In the Acanthus Family are many beautiful decorative greenhouse plants. Some are cultivated for their ornamental foliage, others for their showy flowers. Aphelandras are one of the more spectacular of these latter, the brilliancy of their red, orange or yellow flowers making the greenhouse a showplace in the winter, which is their season of blooming. One species, *A. tetragona,* was long rated among the group of truly magnificent greenhouse subjects. It, however, is a large shrub up to fifteen or more feet tall, so that when *A. aurantiaca* was introduced to cultivation, its smaller size and more dense spike and its brilliantly colored flowers rated it immediately as of more decorative value, the variety *Roezlii* with its more red flowers and bluish-marbled leaves rating even higher. Both the species and variety are small growing plants, flowering at a height of six inches and rarely surpassing one foot in height. *A. aurantiaca Roezlii* was discovered in 1866 in the damp forests of the State of Vera Cruz in Mexico by M. B. Roezl, who also sent living material to the Botanical Garden in Zurich, Switzerland.

Aphelandras are of easy cultivation in the greenhouse. They should be grown at a temperature of 75° F., in diffused light and given plenty of moisture in the growing and flowering season. Flowering is in late fall and winter, after which the plants should be rested and treated in the same manner as Poinsettias, in a cooler and drier atmosphere. Propagation is by cuttings of partially ripened wood which may be taken at any time and rooted in a mixture of loam, peat and sand.

The generic name *Aphelandra* is derived from the Greek words for "single" and "male," in allusion to the one-celled anthers.

Aphelandra aurantiaca var. *Roezlii* is a suffrutescent perennial up to three feet in height. The leaves are opposite, broadly ovate, three to four inches long, tapered at the base into a short petiole, the blade untoothed, deep green with blue marblings along and between the veins. The inflorescence is four to five inches long, terminal, four-sided, the lance-ovate bracts closely overlapping and each subtending a flower. The flowers are nearly two inches long, consisting of a slender tube an inch and three-eighths long, and a strongly

bilabiate limb three-quarters to five-eighths of an inch long. The tube and the inner face of the upper lip are deep yellow, the lower lip and the outer side and edges of the upper lip brilliant scarlet. The four stamens have slender filaments nearly as long as the corolla and attached to it above the base. The anthers are linear and one-celled. The pistil consists of a slender ovary and style, the stigma oblique. The fruit is a narrowly ellipsoid capsule, two-valved and elastically dehiscent.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Top of a flowering plant. Fig. 2.—Corolla, laid open.

CENTROPOGON HYBRIDUS LUCYANUS

(Plate 746)

CENTROPOGON HYBRIDUS LUCYANUS

Garden Origin

Family LOBELIACEAE — LOBELIA Family

Centropogon hybridus Lucyanus Houllet, Rev. Hort. **1868**:291 with *Plate 1868.*

Many tropical plants that twenty-five or thirty years ago were familiar to professional growers are rarely seen today. There are, however, amateur plantsmen with greenhouse facilities who are constantly on the lookout for something unusual and attractive. Here we have a plant that will appeal to such gardeners.

The genus *Centropogon* – the name is derived from two Greek words meaning spur and beard and referring to the mop of filament surrounding the stigma – is native to Mexico and south to Surinam. The most colorful of this little group is recorded as a bigeneric hybrid between *Centropogon fastuosus* and *Siphocampylus betulaeformis* and labelled *Centropogon hybridus Lucyanus. Siphocampylus* is closely allied but of little decorative value, and it is rather interesting that from this cross we have received the most popular and vigorous-growing of the genus *Centropogon.* It is recorded as having been raised in 1856 by M. Desponds of Marseilles, France.

The plant requires ample water supplies during the growing season, which means the soil should not only be rich but sufficiently granular and well drained to assure aeration.

The flowers, appearing in mid-winter, last from four to six weeks. When these wane the plant may be cut down to ten or twelve inches long and kept in a 50° F. temperature until early March. Refrain from watering at this time unless the soil becomes very dry. As March advances the temperature should be raised and the plant may be sprayed in the mornings, thus encouraging new growth, which, when three or four inches long should be used as cuttings. These root readily, especially when taken off with a heel and placed in sharp sand in a propagating box where the temperature is maintained at 65° F. The first potting should be into 2½ inch pots, using for soil a sandy medium. Grow where the temperature is maintained at 60° F. minimum. In four to five weeks these will be ready to repot into 4 or 5 inch size containers in which they will grow and flower.

From June 20 to September 1 they grow well in a deep cold frame

which should be shaded and liberally ventilated during the hottest part of the day. If the plants are sprayed with water and the frame closed in the early afternoon the growth will be rapid and healthy. Plunging the pots in sand or peatmoss tends to provide an even temperature at the roots which is definitely advantageous. During September and October they should be given an airy location in the greenhouse. This will tend to develop stronger flower buds. Inconspicuous wire supports may be suggested for well grown plants.

Centropogon hybridus Lucyanus is a half woody or suffruticose plant attaining a height of from fifteen to twenty inches at flowering time. The stems are semi-procumbent and show no tendency to branch. The leaves, to three inches long, are alternate, shortly petioled, oblong-lanceolate, finely toothed, pale green and covered with a bluish gray bloom; inflorescence in axillary and terminal clusters amounting to four to eight flowers in each; the flowers somewhat curved and angular, of a pleasing rosy carmine color, are one and one-half inch long, made up of lanceolate segments in five divisions united below into a tubular corolla split down one side.

JAMES G. ESSON

EXPLANATION OF PLATE. Fig. 1.—A flowering branch. Fig. 2.—Corolla, laid open.

TRILLIUM RECURVATUM

(Plate 747)

TRILLIUM RECURVATUM

Prairie wake-robin
Native of Central United States

Family LILIACEAE — LILY Family

Trillium recurvatum Beck, Amer. Journ. Sci. **11**:178. 1826.

Among the most loved and popular of American wildflowers are the species of *Trillium,* which are familiar sights in Spring in rich, damp woodlands throughout the United States except in the dry southwest. They occur in several colors, white, pink in various shades, greenish yellow, and maroon, the maroon ones having color forms of straw-yellow, cream, white, or dull pink, and are widely known under the common names of trillium, wake-robin, or birthroot. The center of their distribution appears to be the Southern Appalachian Highlands, where eighteen or twenty species occur. By far the most common species in the central prairie area of the United States, our present subject ranges from Ohio to Minnesota and southward to Arkansas and Mississippi. Throughout this area it is plentiful in open woodlands where the soil is moist in springtime. Besides the normal color here shown, two color phases are known, one with yellow petals and stamens, and another with the petal blades yellow and the claw maroon. Because of the dull color, the flowers are not very conspicuous, but the dark and gray-green mottling of the leaves is very attractive, and is in fact the principal beauty of this plant, giving a variegated carpet effect when it occurs in large colonies.

Trillium is a characteristically North American genus, although four or five little-known species occur in eastern Asia.

The prairie wake-robin is a glabrous perennial herb arising from a short-creeping, horizontal, thick rhizome. The stem is erect, five to ten (rarely 15) inches tall, with a membranous purplish sheath at its base, brown-purple on the lower portion, the upper portion green with brown-purple streaks. The stem terminates in three broad-elliptic to ovate leaves, one and a half to three inches long, tapered at the base into a short petiole, the blades usually dark green with gray-green mottlings. The stalkless flower is seated in the circle of leaves at the apex of the stem. The three sepals are sharply recurved, broad lanceolate, one-half to one inch long, green with purplish edges. The three pointed petals are erect, but bowed out centrally, an inch to an inch and a half long, the blade narrowly ovate, tapered below into a claw about one-quarter inch long. The three maroon stamens are one-fourth to one-half inch

long, bowed into a curve, the linear anthers nearly twice as long as the filaments. The ovary is green, six-lobed, crowned by three stout, purplish stigmas. The fruit is a yellow-green berry, depressed-globose in form, its upper half with six thick wings. The seeds are numerous, globular and brown, about one-sixteenth inch in diameter.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Flowering plant. Fig. 2.—Leaf of a sterile plant. Fig. 3.—Pistil and a stamen, seated on the calyx. Fig. 4.—Mature fruit.

NEPHTHYTIS GRAVENREUTHII

(Plate 748)

NEPHTHYTIS GRAVENREUTHII

Native of the Cameroon

Family ARACEAE — ARUM Family

Oligogynium Gravenreuthii Engler, Bot. Jahrb. **15**:453. 1892.
Nephthytis Gravenreuthii Engler, Engler & Drude, Veget. Erde **9**, II:250. 1908.

Plants of the Arum Family are among the most popular florists subjects for home or office decoration. While the majority of them are quite showy foliage plants, their flowers are not too dependable outside of greenhouses. Some, mostly of the genus *Anthurium,* have highly ornamental flowers. In some, however, the flowering portions are green or greenish, and of no ornamental value. Such a one is our present subject, although the fruits, when borne, are colorful. It is, however, a quite rare plant, and little-known to commercial growers. Since it has so little ornamental value, it is hardly worth greenhouse space except in specialized collections.

The name *Nephthytis,* however, is well-known in the horticultural trade, but the plant known by that name is *Syngonium podophyllum,* another plant in the Arum Family, but rather distant in relationship. Nurserymen who sell plants under any name they can obtain still hold on to the first one learned, even when given the correct name, and, since these names are continually used on dealers lists, it perpetuates the error, thus causing confusion to those who wish their plants to be correctly named.

Our present subject is native to the Cameroon, in equatorial West Africa, where it was discovered in 1889 by Johannes Braun, botanical collector.

The generic name *Nephthytis* is derived from Nephthys, a character in Egyptian mythology.

Only four species of this genus are known, all natives of West Tropical Africa, where they grow as creepers on the forest floor. Their cultural requirements are simple, a rich loam with a generous admixture of humus, and a warm, humid greenhouse.

Nephthytis Gravenreuthii is a perennial, tropical, forest-floor plant with a slow-growing, creeping stem one-half to five-eighths of an inch thick. The leaves arise on terete petioles eight to fifteen inches long and an eighth to a quarter of an inch thick. The blades are broadly hastate, six to eight inches

long, the two basal lobes nearly half again as long as the central lobe, and drawn into long tapering tips. The inflorescence is borne on a thick peduncle six to eight inches long. The spathe is green, one and one-half to two inches long and one and one-quarter inch broad. The spadix is about an inch long, the flowers greenish cream colored, the upper half male and the lower half female. The male florets consist of three or four anthers with prismatic filaments. The female florets consist of a discoid stigma topping a short conical style and attached to a nearly globose ovary. The fruit is an obovoid bright orange drupe an inch to an inch and a half long.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Inflorescence in fruit, and a leaf. Fig. 2.—Inflorescence in flowering stage. Fig. 3.—Female flower × 5.

POTENTILLA FRUTICOSA VEITCHII

(Plate 749)

POTENTILLA FRUTICOSA VEITCHII

Native of Central China

Family ROSACEAE — ROSE Family

Potentilla Veitchii Wilson, Gard. Chron. **50**:102. 1911.
Potentilla davurica var. *Veitchii* Jesson, Bot. Mag. *pl.* 8637. 1915.
Potentilla fruticosa Veitchii Bean, Trees & Shrubs Hardy in the Brit. Isles **2**:223. 1915.

Those botanical collectors who bring back from their explorations seeds or living plants to enhance the beauty of our gardens are often honored by having their names attached to the plant should it prove to be something previously unknown. Sometimes this honor is accorded to the individual or commercial firm who financed the expedition. Our present subject is one which honors the horticultural firm of James Veitch & Sons, which, by sending collectors to many parts of the world in search of horticultural subjects earned the gratitude of the entire horticultural world.

E. H. Wilson, collector for Veitch & Sons, brought back the seed of this plant in 1900 from the western part of Hupeh province in central China. There, as well as in adjoining Szechuan province, it was common in the upland thickets above 6000 feet altitude on open rocky situations fully exposed to the sun. The plants flowered for the first time in England in 1902 in Veitch & Sons Coombe Wood Nursery. Wilson sent plants to the Arnold Arboretum at Jamaica Plain, Mass. in 1907.

Potentillas are, in the vast majority, herbaceous plants, the few shrubby ones being a group centered around *P. fruticosa,* which, being of widespread occurrence across the north temperate zone in Europe, Asia and North America, is exceedingly variable. These shrubby ones are of easy culture in good loamy soil with adequate moisture. They are all fully hardy as Rock Garden subjects, where their long blooming period from June until frost makes them very desirable.

Potentilla fruticosa var. *Veitchii* is an evergreen shrub, its branches clothed with loose scaly brown bark. The leaves are alternate, three-quarters to one inch long, hairy, pinnate, with three to seven narrowly elliptic leaflets, gray-green above, silvery beneath. The flowers are pure white, usually solitary at the ends of short twigs, but sometimes accompanied by a second cleistogamous flower. The five calyx lobes are ovate, whitish, about one-fourth inch long; alternated with them are five ovate bracts slightly broader than the sepals. The petals are orbicular-obovate, short-clawed, about one-half inch long. The twenty to thirty stamens are about half the length of the petals, with white

filaments and light yellow anthers. The pistil consists of a capitate stigma terminating a clavate or filiform style which is laterally attached to an ellipsoid ovary which is covered with long hairs. The fruit is a cluster of small dry achenes about one-sixteenth inch in diameter.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Flowering branch.

MALVAVISCUS PENDULIFLORUS

(Plate 750)

MALVAVISCUS PENDULIFLORUS

Turk's-cap

Native of Southern Mexico

Family MALVACEAE — MALLOW Family

Malvaviscus penduliflorus Moc. & Sesse ex DC. Prodr. **1**:445. 1824.
Malvaviscus grandiflorus Hort. non HBK.
Malvaviscus arboreus var. *penduliflorus* Schery, Ann. Missouri Bot. Gard. **29**:223. 1942.

The Mallow Family has given us many showy plants for our gardens in both temperate and tropical regions. It contains the hollyhock, one of the most loved of old-fashioned garden flowers; the hibiscus, familiar denizen, in a great range of both blazing and pastel colors, of tropical gardens; okra, one of our vegetables; roselle, tropical imitator of the cranberry in flavor, two important fibres, cotton and sunn-hemp; marshmallow, favorite confection for picnics; and several smaller and lesser known garden flowers.

Our present subject is a familiar dooryard shrub in the Gulf Coast region of the United States where it is commonly called Turk's-cap, its pendulous scarlet funnels in continuous display for at least nine months of the year, and while not as spectacular as its cousin the hibiscus, still has its place in the southern garden landscape.

Native to southern Mexico, it has for many years masqueraded under the name of *Malvaviscus grandiflorus,* but recently it has been found to have been originally named *M. penduliflorus,* a somewhat more apt name.

The genus *Malvaviscus* differs from *Hibiscus* in the peculiar ear-like appendage at the base of each petal, and the fleshy fruit consisting of several large red, one seeded carpels. The name means "sticky" mallow, in reference to these fleshy fruits.

Our plant is easily grown in any good soil, with a reasonable amount of watering. It is propagated by cuttings of year old, ripened wood, made in late fall or early spring. It is not known to bear seed.

Malvaviscus penduliflorus is a widely branched shrub five to six feet tall (rarely to fifteen feet), the main stems and older branches clothed with a close-fitting, dark brown bark. The leaves are three to four inches long, glossy deep green, the petioles slightly hairy, about one-half inch long, the blades sparsely sprinkled on both surfaces with stellate hairs, the margins coarsely shallow-toothed. The flowers are two and a half inches long, solitary in the leaf-axils, on slender, pendulous, short-hairy peduncles about two inches long.

The flower has an involucel of five linear lobes, within which is a tubular calyx a half inch long, with five triangular teeth at its apex. The corolla is brilliant scarlet, its petals spreading only on one side, forming a skirt-like flower. The petals are obovate, each with an ear-like, hairy-margined appendage on one side near the base, it is these appendages that hold the petals together so that they cannot spread open as does a Hibiscus. The numerous brown stamens are attached by short spreading filaments to the upper end of the staminal tube, the apex of the tube having five linear teeth, and exserted beyond the corolla. The slender red style protrudes a half inch beyond the corolla, its eight to ten stigma lobes each terminated by a brush-like brown head. The fruit has not been described.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—A flowering branch. Fig. 2.—A petal. Fig. 3.—Tip of staminal tube and style with stigmas x2.

PHALAENOPSIS LUEDDEMANNIANA OCHRACEA

(Plate 751)

PHALAENOPSIS LUEDDEMANNIANA OCHRACEA

Native of the Philippines

Family ORCHIDACEAE ORCHID Family

Phalaenopsis Lueddemanniana var. *ochracea* Reichenb. f. Gard. Chron. **1865**:434. 1865.

It is now well over a hundred years since the genus *Phalaenopsis* first came to the notice of botanists and growers of choice exotics. The word is derived from the Greek *phalaina,* meaning a moth, and *opsis,* resemblance; the flowers having been compared to some uncommon lepidopterous insect.

In Lindley's Botanical Register 1838. t.34 we read that *Phalaenopsis amabilis,* or the Indian Butterfly as it was called, and one of the better known species, first flowered in Europe in 1838. Some few may say that hybridization, giving extra size to flowers, is not an improvement of the species as it was fashioned by nature, but hybridization has placed some of the phalaenopsis high in the popular demand of orchidaceous flowers. While *P. amabilis* is a distinguished parent of these hybrids, is it not possible that new and differently colored celebrities may be derived from untried species? In *P. Lueddemanniana* and its varieties we may have one that in the future will gain similar prestige.

The subject in hand is native to the Philippines – a country rich in Pacific flora and which have been called the Garden Isles of the China Sea. The plant is an epiphyte, clinging to and turning round the stems of trees by means of numerous thick white, intricate roots. This immediately gives us a clue to its method of culture, similar to that practiced with all cultivated phalaenopsis. It favors perfect drainage which, of course, provides the aeration so necessary for the roots. In its native habitat the climate is extremely humid and it would be very cold indeed if the temperature dropped to 60° F. So, we must grow this phalaenopsis in a warm greenhouse where humidity is relatively high. It could be grown in a Wardian case; ordinarily the humidity of a living room would not be conducive to success. The container should be shallow – about four or five inches deep, with about one-half of the inside filled with drainage material such as clean crocks or rough gravel. The compost may consist largely of Osmunda fiber. Some growers favor mixing in a small quantity of chopped Sphagnum moss. Potting should be done when root tips show signs of new activity. The long roots should be spread

around on the drainage material and the compost packed in about them, making it thoroughly firm and at the same time setting the plant so that when potting is completed the crown of the plant is well above the edge of the container. If the pot in which the plant is growing is stationed on an inverted one, nature's environment will be more or less simulated.

Spraying is not to be recommended during winter unless the plant is so placed that water falls away from the leaves. It is only beneficial in hot days. Water to the roots should be applied liberally but only as needed, always remembering that saturation of the roots is bad while saturation of the atmosphere is to the plant's liking. Allow the compost to be thoroughly dry on the surface before applying fresh water. Nutrient gravel culture experiments have proved that the plant grows well when the roots are not constantly moist. The temperature in summer will be taken care of naturally, but during winter it should never drop below 62-65° F. At no season should the plant be exposed to direct sunlight, and during summer, shade rather heavily.

This phalaenopsis is propagated vegetatively by pegging down to the compost in the pot, plantlets that are curiously emitted from the flower stem. There they will make new roots and subsequently be divided from the parent plant.

Professor Reichenbach described *P. Lueddemanniana ochracea* in a very interesting way in Gardeners' Chronicle 1865:434. He tells of its first being flowered by Mr. Lueddeman of Paris to whom the species was dedicated. There were several varieties but this one was as he says "highly curious from having all the stripes on the sepals and petals of a light ochre color. The apex of the labellum in this species is subject to such remarkable and highly curious variations as would induce some botanists to propose several new species."

Phalaenopsis Lueddemanniana ochracea is a monopodial orchid with a short non-pseudobulbous leafy stem. The oblong leaves are eight inches or more long, leathery and polished, of a deep green color. The inflorescence is sometimes eighteen to twenty inches long; flowers two to three inches across; sepals and petals oblong-acute with yellowish ground and with stripes and blotches of an ochre color; the labellum or lip is three lobed and creamy white.

JAMES G. ESSON

EXPLANATION OF PLATE. Fig. 1.—A flowering plant. Fig. 2.—Column and lip x2 (side view). Fig. 3.—Column and lip x2 (front view). Fig. 4.—Anther x4. Fig. 5.—Pollinia x4.

GASTERIA PULCHRA

(Plate 752)

GASTERIA PULCHRA

Native of South Africa

Family LILIACEAE — LILY Family

Aloe maculata pulchra Ait. Hort. Kew. **1**:469. 1789.
Aloe pulchra Jacq. Hort. Schoenbr. **4**:10. *pl. 419.* 1804.
Gasteria pulchra Haw. Syn. Pl. Succ. 86. 1812.

Among the rather limited number of plants which can hold their own in overheated apartments and homes where the air is dry, and where they are subject to neglect, gasterias are star performers. There are cases known where they have been untended for a year and still retained sufficient life so that when they were given water, growth continued as though they had never had the long rest. This kind of treatment is not, of course, to be recommended, for plants being living things, a reasonable amount of attention is necessary to keep them in the best possible health.

While they lack the bright green, lush-appearing foliage of begonias, ferns, philodendrons and other more popular plants, their dark, mottled leaves and angular spread is quite in keeping with modernistic furnishings, as also is their texture, so firm and stiff that they seem as if carved of stone. When, in late winter, their long spikes of coral-pink, green-tipped flowers appear, they are oddly attractive for a long time, since the inflorescence takes several weeks to bloom itself out. Among the different kinds, there is not a great amount of variation. They differ in size of the plant, and in leaf arrangement, *i. e.*, some have leaves spirally placed and others are two-ranked: some leaves are broad and blunt-tipped, others narrow and pointed. The greatest variation is in the markings of the leaves; the majority are as the one here illustrated, with whitish, gray, or pale green markings, some have the surface smooth, some have warty surfaces, the warts either mere lumpy protuberances or strongly raised tubercles, these latter in one or two species very prominent and white, so as to give the leaves a veiled appearance. All have flowers very similar, varying in intensity of color from pinkish white to coral, but always with green petal tips. The amount of inflation of the lower part of the flower also varies from nearly orbicular to almost tubular.

Under cultivation, gasterias grow best in a mixture of about one-third each of loam, leafmold and sand. They should be given a rest in summer from June to mid-August, and during that period, water only once a week.

From May to September they should be kept in the shade.

The generic name *Gasteria* is from the Greek word for belly, referring to the swollen base of the flower tube.

Gasteria pulchra is a caespitose plant with stiff, succulent leaves arranged in a semi-spiral rosette, developing with age, a short caudex. The leaves are smooth-surfaced, clasping at the base, becoming triangular above, two of the sides one-half to three-quarters of an inch wide, the other side one-quarter inch wide, glossy dark green with short streaks and blotches of a gray or whitish color transversely confluent into irregular bands: these leaves are six to eight inches long with a hardened tip and slightly roughened margins. The inflorescence is a usually branched raceme, the peduncle and rachis dark greenish purple. The flowers are pendulous on red pedicels and are each subtended by a scarious greenish-tinged bract. The perianth is five-eighths of an inch long, inflated below, tubular above, the inflated portion coral-pink, the tubular portion green and white striped, the spreading tips white with green midvein. The six stamens have white filaments nearly as long as the perianth, the ovary is ellipsoid-cylindrical, the style slender and whitish, topped by a truncate stigma. The fruit is a narrowly ellipsoid capsule, three-lobed, loculicidal, with black, obovate-triangular seeds.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Portion of an inflorescence. Fig. 2.—Section of a plant. Fig. 3.—Gynoecium and Androecium x2.

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ADDISONIA

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AND

POPULAR DESCRIPTIONS

OF

PLANTS

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"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonymy, and a brief statement of the known properties and uses of the plants illustrated."

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TRILLIUM UNDULATUM

(Plate 753)

TRILLIUM UNDULATUM

Painted Trillium

Native of Northeastern North America

Family LILIACEAE — LILY Family

Trillium undulatum Willd. Ges. Nat. Fruende Berlin Neue Schr. 3:422. 1801.
Trillium erythrocarpum Michx. Fl. Bor. Am. 1:216. 1803.

Denizen of deep, cool, northern woodlands, the painted trillium is by many people considered the most beautiful flower of its kind. Not only does it bear its showy flowers in the spring, but it makes a second display in the autumn when its fruits become a bright scarlet. It is the only trillium with a brightly colored fruit.

While very desirable and much sought after by wildflower gardeners, it is the most difficult of trilliums to grow. The would-be grower usually plants it in the usual deep woodland leaf-moldy soil in which trilliums thrive, and after one year of stunted growth it disappears. The type of soil is only partly correct, but it must also be as acid as the soil for rhododendrons and azaleas, and there must be a sufficient supply of moisture to insure its not drying out in summer, and also it requires some shade for best results. Moisture and acidity are the most important, and this plant may be most happily established in the shade of acid-loving plants, since their requirements are similar. It is one of the latest trilliums to flower, coming into blossom in the latter part of May.

The natural range of this plant is from the Gaspé Peninsula of Quebec to eastern Manitoba and of frequent occurrence south into the New England States, New York, Michigan and Wisconsin, and southward in upland and mountain regions to Georgia and Missouri.

The painted trillium is a glabrous perennial herb arising from a short-creeping, thick, horizontal rhizome. The stem is erect, six to fifteen inches tall, with a membranous, purplish sheath at its base, brownish-purple on the lower portion, becoming purplish-streaked above. At the top of the stem are three broad-ovate, acuminate leaves, abruptly contracted at the base into petioles one-fourth to three-fourths of an inch long, the blades bright to dark green with a narrow, reddish margin. The flower is borne on a stalk one to two inches long, which arises from the center of the ring of leaves. The three sepals are lanceolate, spreading, three-fourths to one inch long, deep green, often with a red margin. The three petals are spreading, an inch to an inch and a half long, undulate-margined, white with rosy-purple streakings near their base. The three purplish stamens are about three-eights of an inch long, the linear anthers about one and one-half times longer than the filaments. The ovary is about the same length as the sta-

mens, greenish cream-colored, bluntly three-angled, the three slender styles pinkish. The fruit is a bright scarlet ovoid berry about one inch long, seated on the receptacle which still bears the now withered petals and green, recurved sepals. The numerous seeds are depressed-globular, light brown, about one-tenth inch across.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—A Flowering stem. Fig. 2.—Stamens X2. Fig. 3.—Pistil X2. Fig. 4.—Fruit.

EPIMEDIUM VERSICOLOR SULPHUREUM

(Plate 754)

EPIMEDIUM VERSICOLOR SULPHUREUM

Horticultural Origin

Family BERBERIDACEAE — BARBERRY Family

Epimedium macranthum var. *sulphureum* Morren, Ann. Soc. Agr. Bot. Gand. **5**:91. 1849.
Epimedium versicolor var. *sulphureum* Stearn in Kew Handlist of Rock Gard. Pl. ed. 4. 53. 1934.
Epimedium versicolor clon *sulphureum* (Morren) Stearn, Journ. Linn. Soc. Bot. **51**:518. 1938.

Epimediums are particularly well-suited for woodlands and shaded areas where not many other plants will grow and flower. They may also be used in full sun, but there they become more compact and short in stature and the foliage has a tendency to dry off in late summer unless they are kept well-watered. It is therefore in the shade that they reach their best development, so much so that they appear to be as perfectly at home as if they were natives. There they spread into large colonies, where in the spring their dainty flowers, reminding one of miniature columbines, give a pleasing note over the unfolding leaves which are tinted bronze at this stage of growth. The full grown leaves are peculiarly attractive in the form of their leaflets, and their "different" appearance from the general run of garden plants is of high ornamental value in rock gardens and under trees or large shrubs where they may be used as a ground cover, since, except for the flowering stems, they rarely grow over a foot tall. Since they rarely, if at all, produce seed, propagation is best effected by division, which should be done in the fall or early spring.

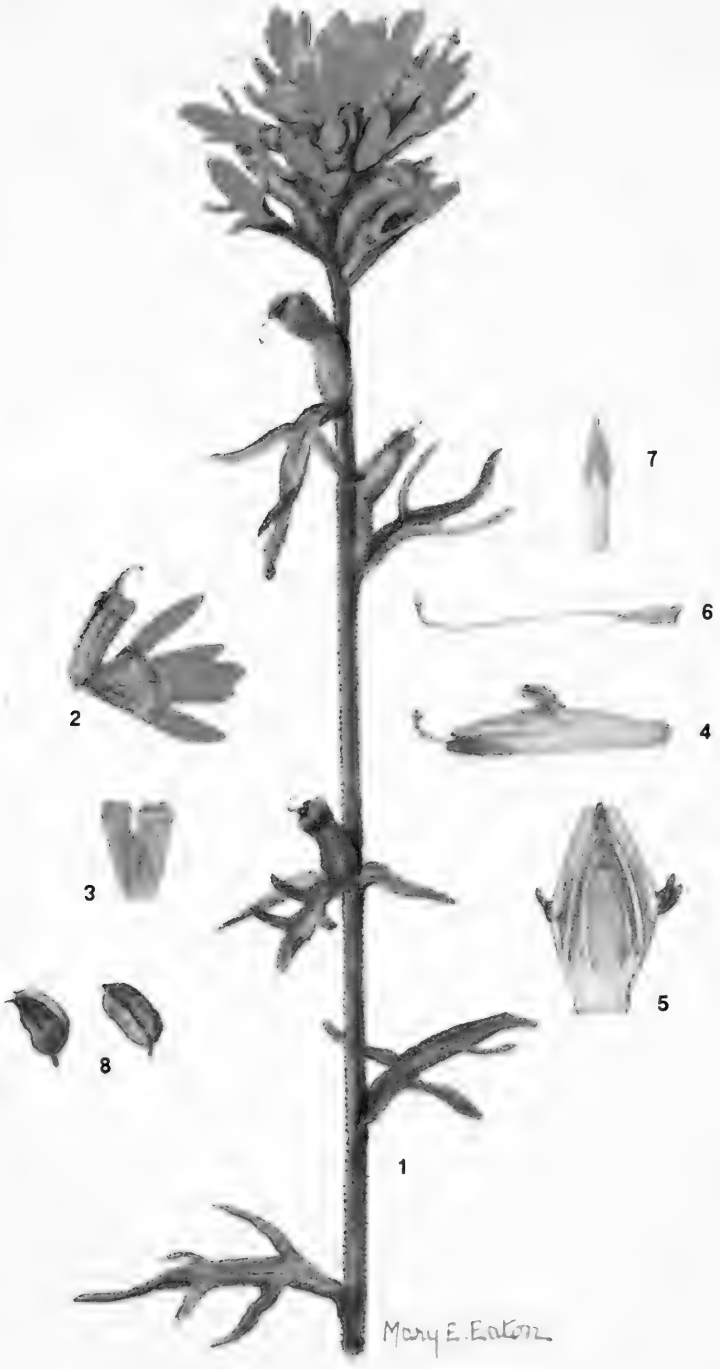
Our present subject is the most commonly grown of epimediums, and since it has never been found wild, and unites the characters of two long-cultivated species, is assumed to be of hybrid origin. There are four different clones of this hybrid, differing in coloring and leaf form. Three of them have been known as garden plants for over a hundred years. They have been known under several different garden names.

Epimedium versicolor sulphureum is a perennial herb eight to twelve (occasionally to twenty) inches tall, its leaves and flower stalks arising from a long-creeping, much-branched rhizome one-eighth to one-fourth inch thick. The leaves are basal and on the flower-stalk, each ternately divided, with each of the three divisions terminating in three stalked leaflets, making nine leaflets in all, but occasionally some leaves vary in having as few as five

or as many as eleven leaflets. The leaf- and leaflet-stalks are sparingly hairy, the leaf-blades ciliate with spine-like hairs, varying in size from one-half inch long at flowering time to three and a half inches long when mature, deep green, but red or brownish mottled and margined when young, ovate and deeply cordate at the base, sometimes one side with a longer basal lobe than the other. The flower stalk is usually smooth, bearing eight to twenty flowers on stalks one-fourth to one inch long, the flowers nodding at the tip of the stalk. The four outer sepals are green, oblong and blunt, about one-eighth inch long, deciduous when the flower is expanded; the four inner sepals are sulphur-yellow, about one-fourth inch long, ovate and spreading; the four petals are about one-fourth inch long, lemon yellow, with an upright blade and a long spur one-fourth inch long, which lies flattened against the inner sepals. The four stamens are concealed within the petals, and are about three-sixteenths of an inch long, with large yellow anthers.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Top of flowering stem, with its leaf. Fig. 2.—A petal X2. Fig. 3.—Leaves, showing upper and lower surface.



CASTILLEJA COCCINEA

(Plate 755)

CASTILLEJA COCCINEA

Indian paint-brush

Native of Northeastern United States

Family SCROPHULARIACEAE FIGWORT Family

Bartsia coccinea L. Sp. Pl. 602. 1753.
Castilleja coccinea Spreng. Syst. **2**:775. 1825.

Among those American wildflowers which must be seen in their own chosen homes to be appreciated are the ones known as Indian paint-brush or painted-cup. They are definitely not to be considered as garden plants, for, being parasitic on the roots of their neighbors, they do not take kindly to cultivation. However, to anyone who knows them in the wild, they are truly beautiful children of nature, untamable, and wild as the prairies and slopes they paint so lavishly with their splashes of red, deep pink, yellows and purples. Our only common eastern species is our present subject, which along about Decoration Day, paints the grassy meadows which are its home with splotches of blood. Upon examining them closely, it will be seen that it is not the flowers which bear the color, but the leaves which enclose them, called bracts, whose upper halves are colored to resemble flowers, the whole flowering portion condensed towards the top of the stem, and appearing as if it had been dipped into a paint-pot and then stuck into the ground. There are many other species in the mountains and plains of the west, but none more brilliantly colored than the eastern. Perhaps, some day some enterprising horticulturist, working in conjunction with a chemist, will succeed in devising a plant food which will feed these untamed wildings, and thus lead them into the fold of garden plants without the medium of the plant upon whose roots they must feed. We will then be able to enjoy this wild beauty in our own gardens.

The Indian paint-brush is a biennial herb up to two feet in height, clothed in all its parts with short, downy hairs. The first-year growth is a flat rosette of leaves, two to three inches across, dark green and downy, turning purplish over the winter. The following spring there arises a simple or few-branched stem, the stem and each branch of which is topped by an inflorescence. The leaves vary from entire on the older part of the rosette and one or two inches long, to pinnatisect in the newer part of the rosette and on the stem, and up to three inches long. The lower two or three bracts of the inflorescence are like the leaves but smaller, the remaining bracts becoming much broader and three- to five-cleft, their upper half bright

scarlet or vermilion, or very rarely yellow, or even white. The calyx is tubular, one-half inch long, two-cleft, broadly rounded and bright red at the tip, enclosing all but the tip of the corolla. The corolla is light green, or pale yellow in the albino forms, strongly two-lipped, the upper lip flattened laterally, scarcely a third as long as the lower lip which has three very short lobes at its tip. The four stamens are enclosed in the lower lip of the corolla, composed of two pairs, one shorter than the other, the anthers unequally attached to the tip of the filaments. The pistil consists of an oblong ovary, a long, slender upcurved style and a capitate stigma. The fruit is a two-celled oblong capsule, containing many chaff-like seeds.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Top of a flowering stem. Fig. 2.—A flower and subtending bract. Fig. 3.—Calyx, laid open. Fig. 4.—Corolla X2. Fig. 5.—Corolla laid open X2. Fig. 6.—Pistil X2. Fig. 7.—Stamen tip X4. Fig. 8.—Capsule open and closed.

PINUS BANKSIANA

(Plate 756)

PINUS BANKSIANA

Jack pine

Native of Northern North America

Family PINACEAE — PINE Family

Pinus sylvestris var. *divaricata* Ait. Hort. Kew. **3**:366. 1789.
Pinus Banksiana Lamb. Pinus **1**:7, *pl. 3*. 1803.
Pinus divaricata Dum.-Cours. Bot. Cult. ed. 2. **6**:457. 1811.

Spurned and disregarded though it be, the jack pine (sometimes called gray or scrub pine) is the hardiest to winter cold of all the pines, since its natural range extends into the frigid regions of the north. Barren, rocky slopes and stretches of cold bog are its preferred habitat, and within the cold northwest of Canada where it reaches full tree size, it is a boon to the scattered and scant population, furnishing fuel, and sometimes lumber, posts and railroad ties. In eastern Canada and along the borderland of the northeastern United States, it is of low stature with low branches, and an open, symmetrical top usually with a wide curve to its topmost growth. Its crouching and sprawling habit, with stubby gray-green leaves, and the unsightly way in which it carries its old cones for a dozen or more years, incurved on its branches, always pointing towards the apex of the twig on which they grow, make it rather useless for horticultural purposes, unless one wishes to produce a picturesque and barren effect on a rocky area.

The natural range of this tree is from the border states of the eastern United States and eastern Canada, dipping south into northern Illinois and thence across Minnesota into central western Canada and over the barren areas of Great Slave Lake, and on down the valley of the Mackenzie River to the Arctic Circle. It is thus the most northward ranging of pines, extending into the realm of fir, spruce and larch.

The jack pine is an evergreen, monoecious tree, which under the most favorable conditions in northwestern Canada may reach eighty feet in height with a trunk diameter of three feet, but in the greater part of its range rarely surpasses thirty feet in height with a trunk diameter of eight inches. Its trunk and older branches are covered with a dark reddish-brown bark with irregular, scaly plates and roughened ridges. The twigs are purplish to yellowish brown, smooth, but roughened by the scaly base of the leaf clusters. The needles are in bundles of two, their bases enclosed within short persistent sheaths, three-fourths to one and one-half inches long, stout, stiff, and spreading, usually curved and twisted, flattened or grooved on one

side and rounded on the other, dark, dull, yellowish-green in color. The winter buds are oblong-ovoid, light brown and resinous. The male cones are light yellow-brown, catkin-like, clustered at the base of the young growth, composed of many spirally arranged, two-celled anthers. The female cones are dark purple, ellipsoid, single or few together at various places on the young shoots, composed of numerous spirally arranged, two-ovuled scales. The mature cones are one to two inches long, pointed and strongly incurved, narrowly ovoid and usually more or less distorted, at first tawny yellow, becoming blackish gray with age, and remaining unopened on the tree for many years. The seeds are rounded-triangular, nearly black with a thin papery wing about one-third inch long.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—A cone-bearing twig. Fig. 2.—Staminate inflorescences. Fig. 3.—Staminate scale, side view X8. Fig. 4.—Staminate scale, face view X8. Fig. 5.—A young conelet. Fig. 6.—Winter buds X2.

RHODODENDRON MUCRONULATUM CILIATUM

(Plate 757)

RHODODENDRON MUCRONULATUM CILIATUM

Korean Azalea

Native of Korea and Japan

Family ERICACEAE HEATH Family

Rhododendron mucronulatum var. *ciliatum* Nakai, Fl. Sylv. Kor. **8**:37. 1919.
Rhododendron dauricum var. *ciliatum* E. H. Wilson, Jour. Arnold Arb. **4**:51. 1923.

In the great assemblage of plants that comprise the genus *Rhododendron,* there are, as would be expected in such a group, many variations as to size of plant, form of foliage and flower, and differences in floral structure. Some of these variations have, in the past, caused some botanists to separate the plants involved into different genera, but when all the intergradations are taken into consideration, it becomes evident that the genus, from the botanical viewpoint, is best not divided. Horticulturists prefer to use the name *Azalea* for the deciduous species, and even there, difficulties arise. Our present subject well illustrates this situation, for it is one which is quite intermediate in character. It is deciduous as are the azaleas, but it has the floral form and the ten stamens usually associated with *Rhododendron,* and to further complicate matters, it crosses with both rhododendrons and azaleas equally well, and has been one of the parents of some interesting hybrids.

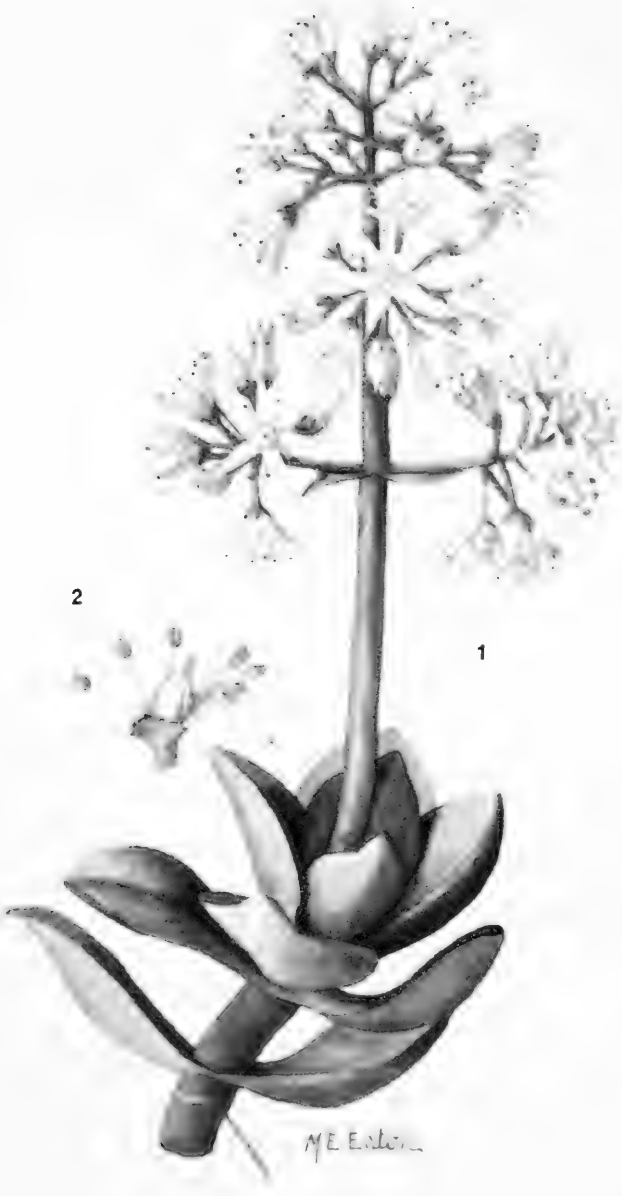
Aside from botanical consideration, however, the Korean azalea is of considerable value horticulturally. It is the earliest of all hardy rhododendrons to bloom, and the color of its flowers in various shades of light rose-purple, is very pleasing at the season when there are few other bright-colored flowers in bloom. In the fall it gives a second touch of color by reason of the bright orange-red coloration of its foliage. While not a large shrub, its freely borne flowers, which come before the leaves, are highly ornamental. Three varieties are known; the Korean form here pictured appears to be the best known horticulturally, and is said to be of fairly common occurrence on rocky slopes at altitudes of more or less than one-thousand feet. It usually flowers in April in the northeastern United States.

The Korean azalea is an upright shrub two to six feet tall, the stems and branches clothed with a thin, light brown, slightly scaly bark. The leaves are deciduous, alternate, bright green, on short, sparsely ciliate petioles. The leaf-blades are elliptic-lanceolate to lanceolate, thin-textured,

sparsely ciliate, one and one-half to three inches long, with scattered gland-like scales on both surfaces. The flowers are borne before the leaves, in clusters of three to six at the ends of the branches, on short scaly stalks. The calyx is five-lobed and scaly, the lobes rounded, scarcely one-sixteenth inch long. The corolla is one to one and a half inches across, somewhat saucer-shaped, light rose-purple, the lobes rounded and more or less wavy-margined. The ten stamens are the same color as the corolla, the slender filaments slightly decurved, woolly on the lower half, the anthers whitish. The style is slender, rose-purple, somewhat longer than the stamens and corolla, curved upward, with a capitate stigma. The fruit is a slender five-angled capsule, about five-eighths inch long, dotted with resinous scales. The numerous, tan-colored seeds look like bits of sawdust.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Flowering twigs. Fig. 2.—A leafy twig.



CRASSULA LACTEA

(Plate 758)

CRASSULA LACTEA

Native of South Africa

Family CRASSULACEAE ORPINE Family

Crassula lactea Soland. in Ait. Hort. Kew. 1:396. 1789.

City dwellers and other window-gardeners would be well to acquaint themselves with our present subject, for it is as easy a plant to grow as the omnipresent *Crassula argentea,* more commonly called Mexican rubber plant, in spite of the fact that its home is in South Africa. In addition, *Crassula lactea* is a more neat and smaller-growing plant, and a free-bloomer in mid-winter, and does well without a great amount of sunlight. It takes kindly to simple cultivation, requiring only a fairly rich, well-drained soil, good light, but not necessarily sun, and a good summer rest with only enough water to keep it from drying out.

In common with nearly all succulent plants, this Crassula is easily propagated by stem cuttings or by leaves. Simply allow the cutting or leaf to dry for twenty-four hours and then insert in sand and keep damp until rooted. They may even be placed in the pot of soil in which they are to grow and kept moderately damp until new growth starts.

The genus *Crassula,* consisting of some five hundred species in South Africa, runs the gamut of nearly all plant forms, ranging from floating aquatics, and ground-creepers suitable for hanging baskets or greenhouse ground-cover, through shrubs of all sizes and shapes. There are no true vines or full-sized trees in the genus, although many of the shrubby ones have tree-like form in miniature. Nearly all are eminently suited for pot culture, few get out of bounds and some are truly showy when in flower. Nearly all of them do reasonably well in windows which receive good light, although the best flowering of some is done in fairly strong sunshine. It is rather regrettable that so few are in cultivation, and it is to be hoped that horticulturists will introduce a greater number of species than are at present known to American gardeners.

Crassula lactea is a succulent glabrous shrub about a foot tall, with few, rather loose-branched stems which are covered with a thin, papery brown skin. The leaves are opposite, very thick and fleshy, narrowly obovate in outline with a blunt tip, one to one and one-half inches long. The inflorescence is a paniculate cyme three to five inches long including the long stalk. The flowers are about five-eighths inch across, the floral parts in fives;

the calyx-lobes about one-sixteenth of an inch long; the white petals about one-fourth inch long, lanceolate and sharp pointed; the five stamens with purplish pink anthers on white filaments, alternating with the calyx-lobes; the cluster of five white carpels is half the length of the corolla.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—A flowering branch. Fig. 2.—Corolla laid open to show carpels X2.

RHODOTYPOS KERRIOIDES

(Plate 759)

RHODOTYPOS KERRIOIDES

Jetbead

Native of Central China

Family ROSACEAE — ROSE Family

?Corchorus scandens Thunb. Trans. Linn. Soc. **2**:335. 1793.
Keria tetrapetala Sieb. Verh. Bat. Genoot. **12**:69. 1830. Nom. Nud.
Rhodotypos kerrioides Sieb. & Zucc. Fl. Jap. **1**:187. *pl. 99.* 1841.
Rhodotypos tetrapetala Makino, Bot. Mag. Tokyo **17**:13. 1903.
Rhodotypos scandens Makino, Bot. Mag. Tokyo **27**:126. 1913.

It is well known to plant students and to horticulturists that plants from eastern China are particularly well adapted to eastern United States gardens by reason of similarity of climate and latitude. Our present subject, while not especially showy in flower, is nevertheless a rather pleasing shrub because of the clean green of its strongly-ribbed leaves, and its habit of flowering irregularly through the summer, although the major flowering period is in May and June. The large, glossy black seeds seated in the persistent calyx are the source of the common name of jetbead. These seeds do not reach full color until October, but remain all winter. The plant grows easily from seed in any kind of soil, but does best in a good loam. It may also be propagated by cuttings. This neat-growing shrub was first introduced into European gardens by C. J. Maximowicz, who sent material to the Imperial Gardens of St. Petersburg. Since a picture of flowering material was published in 1866, the seeds must have been sent prior to that year. A colored plate was published in Curtis Botanical Magazine in 1869, so seeds must have been sent to other parts of Europe soon afterwards.

The exact native home of this shrub is still in doubt. It was originally described from cultivated material in Japanese gardens, but was said to grow wild in the high mountains of Shikoku and Kyushu. There do not appear to be any specimens of wild material from Japan. Several collections of wild plants from Kiangsu Province of China exist, but all are of fairly recent origin, and appear to be roadside collections from a botanically long-known area of China, and are probably escapes from cultivated plants. The only specimens that seem to be of truly wild plants are from western Hupeh Province, and collected by E. H. Wilson, so that it seems best to assume that area to be the original home of this plant.

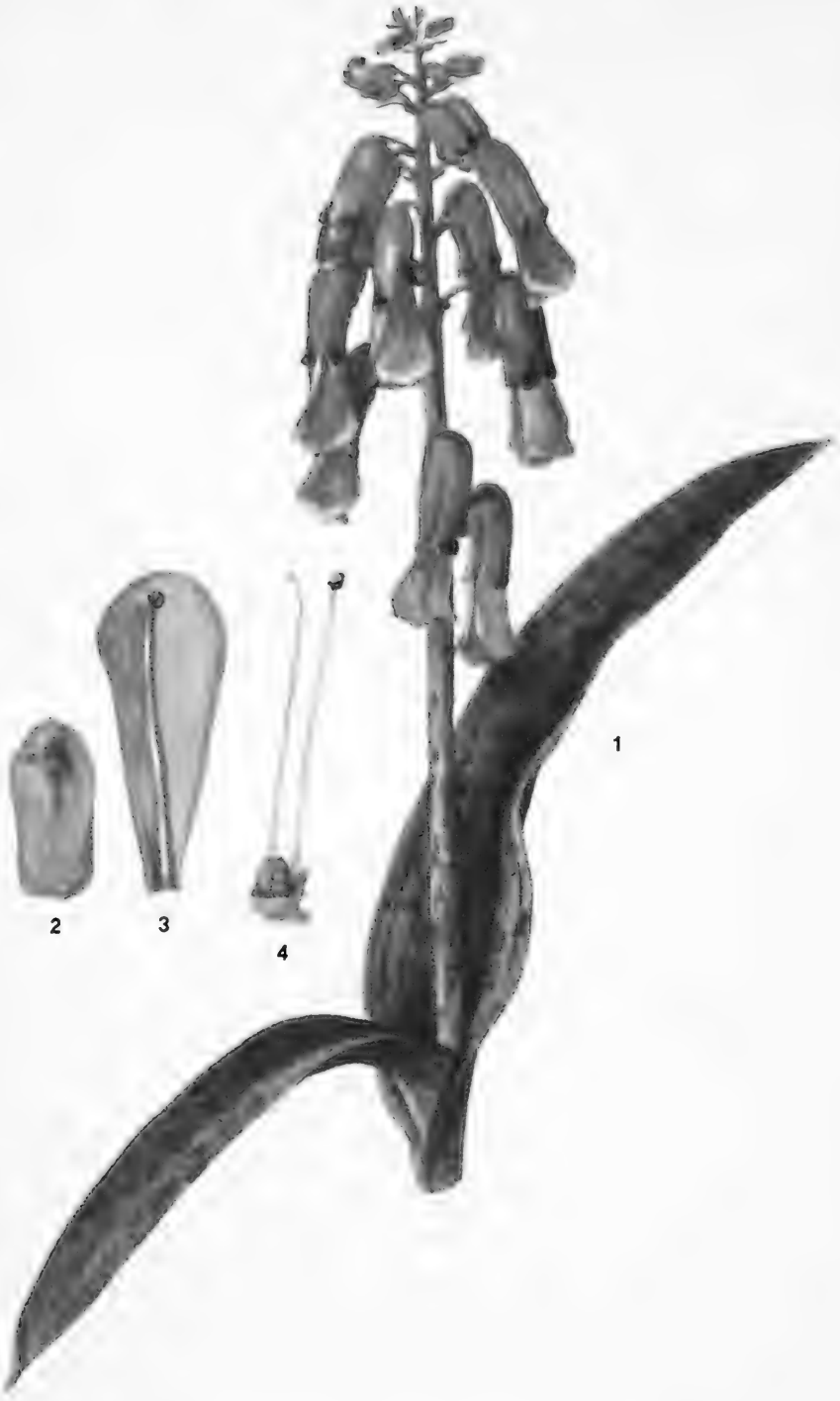
The writer considers it advisable to return to the name *Rhodotypos kerrioides* since the other two names offered are not satisfactorily accounted for. *R. scandens* is based on an unidentifiable and confusing binomial, and *R. tetrapetala* is based on a Nomen Nudum.

Botanically, *Rhodotypos* and its sister genus *Kerria* are of interest as being the only two members of the large Family Rosaceae which have opposite leaves, a quite unusual character in that family.

The jetbead is an upright-spreading shrub with opposite branches, the main stems and older branches clothed with a close-fitting gray-brown bark. The leaves are opposite, two to three and one-half inches long, ovate to ovate-oblong, with an acuminate tip and rounded base. The stipules are awl-shaped, one-eighth to one-fourth inch long, silky-haired, as also are the short leaf-stalks. The leaf-blades are so sharply double-toothed as to appear jagged-edged, bright green and smooth or with a few scattered hairs on the upper surface, lighter green and silky-haired on the under side. The flowers are solitary at the end of the twigs, one to two inches across. The four calyx-lobes are ovate, one-half to three-fourths of an inch long, with sharp-pointed tip and sharp-toothed edges, and with four awl-shaped bracts about one-tenth of an inch long attached on the outer base of the calyx, and alternating with the sepals. The petals are pure white, suborbicular to broad-elliptic, attached at the mouth of the hypanthium alternately with the sepals. The stamens are white, numerous, attached on a disk at the mouth of the calyx, barely half as long as the sepals. The inner edge of the disk, in the form of four silky, fleshy lobes, extends over and conceals the carpels. The pistillate portion consists of four coherent carpels with slender styles and blunt stigmas. The fruit consists of one to four dry ellipsoid drupes about three-eighths of an inch long, with a crustaceous, shining, black outer coat, and a hard, bony, whitish stone.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—A flowering twig. Fig. 2.—Calyx. Fig. 3.—A fruiting branch. Fig. 4.—A seed.



LACHENALIA TRICOLOR LUTEOLA

(Plate 760)

LACHENALIA TRICOLOR LUTEOLA

Native of South Africa

Family LILIACEAE LILY Family

Lachenalia luteola Jacq. Coll. **4**:148. 1790.
Lachenalis tricolor var. *luteola* Ait. Hort. Kew. ed. 2. **2**:288. 1811.

South Africa is the home of an enormous number and variety of bulbous plants, which, by reason of their place of origin on the other side of the Equator, have their growing and flowering period in our winter. While they may be grown out-of-doors in areas such as the southwestern and extreme southern United States, in colder climates they are suitable only for indoor culture. They are very easily handled as pot subjects, and their great variation in color and form adds much to the beauty of winter greenhouse decoration. Not the least among these are the lachenalias, which, while not very well-known in America, certainly are deserving of more attention, especially in the Southwest and in the southern parts of Florida and Texas. While most of the species are not very showy, the varieties and forms of *L. tricolor* and *L. pendula* are as showy as any flowering bulbs, and with their unusual tubular flowers of yellow, or orange, with red, purplish or green tips, give an oddly different note to the ordinary sorts of winter-flowering plants.

The culture of these plants is fairly simple. The bulbs are planted in August, usually six in a six-inch pan, in good rich loam with a bit of sharp sand added for good drainage. They are then well watered to settle the soil around the bulbs, and not watered again until growth starts. The pans should be stored in a protected coldframe until November, when they may be brought into the greenhouse. After growth is well started, they may be given plenty of water and an occasional feeding of liquid manure. They should be kept in a night temperature of 50°F until the flowering scapes show, as forcing results in malformed flowers. Each large bulb should produce four to five flower-stalks, the blossoming extending over a period of six to eight weeks. After flowering, the pots should be set in a sunny and airy place, and kept watered and fed as before until the foliage begins to discolor and dry; then the watering should be lessened until the leaves have completely dried out. The dormant bulbs are left in their pots and kept

completely dry until the following August, when repotting will be necessary, sorting out the different size bulbs, as the old ones will have multiplied.

The genus is named in honor of Werner de la Chenal, Professor of Botany at Basel, Switzerland, in the Eighteenth Century.

Lachenalia tricolor var. *luteola* is a perennial scapose herb, glabrous in all its parts, and arising from a globose, tunicated bulb an inch in diameter. The two leaves are broadly strap-shaped, five to nine inches long, deep green, with or without purplish spots. The flowering stem, including the flower-bearing portion is six to twelve inches tall and bears six to forty flowers depending upon the robustness of the bulb. The flowers are borne in a raceme, tubular and pendulous, about one inch long, the perianth lobes united near the base; the three outer ones oblong, half an inch long, with a thickened protuberance on the outer side near the tip, the basal portion tinged reddish before anthesis; the three inner ones spatulate, about one inch long; both series greenish lemon-yellow. The six stamens are slightly shorter than the inner perianth-lobes, the anthers versatile on slender whitish filaments. The style is the same length as the stamens, very slender with a capitate stigma; the ovary bluntly three-angled. The fruit is a small, three-angled and three-celled capsule included within the withered and persistent perianth.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—A flowering plant. Fig. 2.—A sepal X2, outside view, showing callus. Fig. 3.—A petal with a stamen X2. Fig. 4.—Pistil and a stamen X2.

RECENT PLATES

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ADDISONIA

COLORED ILLUSTRATIONS
AND
POPULAR DESCRIPTIONS
OF
PLANTS

VOLUME 23 NUMBER 4

JUNE, 1959

PUBLISHED BY

THE NEW YORK BOTANICAL GARDEN

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JUNE 23, 1959

ANNOUNCEMENT

A bequest made to The New York Botanical Garden by a former President, Judge Addison Brown, established the

ADDISON BROWN FUND

"the income and accumulations from which shall be applied to the founding and publication, as soon as practicable, and to the maintenance (aided by subscriptions therefor), of a high-class magazine bearing my name, devoted exclusively to the illustration by colored plates of the plants of the United States and its territorial possessions, and of other plants flowering in said Garden or its conservatories; with suitable descriptions in popular language, and any desirable notes and synonymy, and a brief statement of the known properties and uses of the plants illustrated."

The preparation and publication of the work has been referred to Mr. Edward Johnston Alexander, Associate Curator.

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ARISAEMA STEWARDSONII

(Plate 761)

ARISAEMA STEWARDSONII

Stewardson's jack-in-the pulpit

Native of Northeastern United States

Family ARACEAE — ARUM Family

Arisaema Stewardsonii Britton, Man. ed. 2. 1057. 1905.

One of the most popular of our eastern spring wildflowers is the jack-in-the pulpit, which is also one of the most common, occurring as it does in almost any bit of woodland wherein the soil is not too dried out. In popular conception, the "jacks" consist of one species in the Northeast, but recent work by the specialists has reached the conclusion that what was formerly considered one, is, in reality, three species. Our present subject is more distinct from the other two than they are from each other, its outstanding characteristic being the strongly fluted ridges on the spathe; it is also later-blooming, usually found in flower around New York in the latter part of May, well after the other two species are past their period of flowering.

All three of the native arisaemas, as is the case with most of our spring wildflowers, may be transplanted with ease from their woodland homes into similar situations in wild gardens. This may be done at any season, but, in the writer's opinion, is most satisfactorily done while the plants are in bloom, for the growing urge is most strong at that time, and they will more readily reestablish themselves; also rain is more dependable at that season, thereby giving the moisture favorable to good root development.

Arisaema Stewardsonii received its name in honor of one of its discoverers, Stewardson Brown, co-author with N. L. Britton of the Illustrated Flora of the Northern States and Canada. It grows in damp, rocky woods from northeastern Canada to Minnesota, but south of Pennsylvania occurs only along the mountains to North Carolina.

Stewardson's jack-in-the-pulpit is a glabrous, perennial herb, arising from a corm an inch to an inch and a half in diameter. The entire plant including the leaves is eight to twenty-four inches tall, consisting of a solitary stem bearing the inflorescence at its top, its lower part sheathed by the petioles of the one or two leaves, and these in turn sheathed by two or three papery sheaths two to seven inches long, the sheaths usually purple streaked. The inflorescence and stalk are from six to twelve inches tall,

usually overtopped by the one or two leaves. The leaves are composed of three leaflets, the blades two to five inches long, ovate-acuminate, the two lateral leaflets strongly oblique, the lower half much broader and more rounded at the base than the upper half, which is sharply tapered at the base; all bright green and shining on both surfaces. The spathe is two and a half to five inches long, the tube sharply and deeply corrugate-ridged when fresh, the corrugations usually continuing on into the arching hood, the entire spathe green or purple striped, with the corrugations whitish. The spadix consists of a sterile, long-cylindrical, blunt-tipped terminal appendage three-fourths to an inch and a half long, abruptly contracted at the base into a slender stalk bearing either male or female flowers or both; when both, the males are uppermost. The males consist of a cluster of two-to-four-celled purple anthers opening by terminal pores; the females consist of a single green ovary and short style, the one cell of the ovary containing five or six ovules. The fruit is a globose or ovoid cluster of bright red, fleshy berries, each berry containing one to few obovoid seeds.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Inflorescence and leaf. Fig. 2.—Staminate inflorescence. Fig. 3.—Staminate flowers X18. Fig. 4.—Pistillate inflorescence. Fig. 5.—Pistillate flower X18. Fig. 6.—Fruiting head.

ANEMONE HALLERI

(Plate 762)

ANEMONE HALLERI

Valais Pasque-flower

Native of Switzerland

Family RANUNCULACEAE — BUTTERCUP Family

Anemone Halleri All. Fl. Ped. **2**:170. 1785.

The group of anemones known as pasque-flowers are among the desirable standard plants used in rock gardens. The large, solitary, white or purple (in one case, sulphur-yellow) flowers, usually bloom about Easter-time, hence the name pasque-flower. The flowers are not very long-lasting, but are followed by long-lasting and attractive plumy seed-heads which make more of an ornament in the garden than the shorter-lived flowers. Excepting the one American prairie species, the pasque-flowers are all native of the mountainous regions of the North Temperate Zone, where they grow in stony, moist, but well-drained soil. They are at their best in the rockier sections of the rock garden, but some, especially *A. pulsatilla,* will do reasonably well in perennial borders. The one yellow-flowered species mentioned above has not proved amenable to cultivation in American gardens.

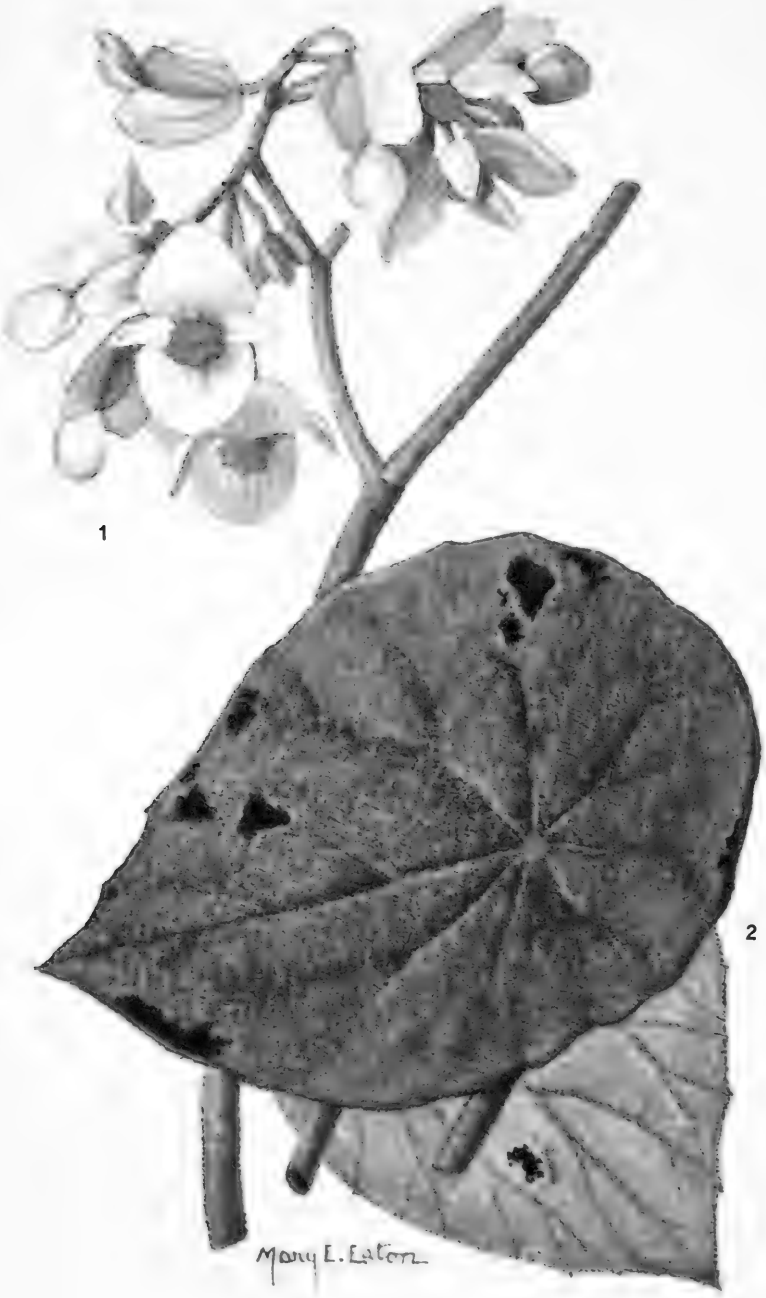
Our present subject is one of the rarer species, and is not often seen in cultivation. This is the most dwarf of the pasque-flower group, rarely, if at all, growing over six inches tall. It was originally found in southwestern Switzerland in the upper valley of St. Nicholas in the Valais Alps by the illustrious Swiss botanist, Albrecht von Haller, whose name it honors, and is said to have been introduced into English gardens about 1816.

The Valais pasque-flower is a perennial herb to six inches tall, arising from the crown of a cluster of fibrous roots. The leaves are all basal, two to three inches long, once-pinnate, the pinnae deeply cut into many linear segments, all covered with silky white hairs. The stem leaves form an involucre less than an inch below the flower at blooming time, but the flower-stalk is elongated to five or six inches beyond the involucre in fruit. These stem leaves are united into a cup-like base, above which the blades are cut into numerous linear segments barely one-sixteenth of an inch wide. The flower is one and one-fourth to one and one-half inches long, consisting of six or seven bright violet-purple, oblong, acute sepals. There is no corolla. The numerous stamens are much shorter than the sepals, and bright yellow. The many carpels each contain a one-ovuled ovary and terminate in

a long, slender, hairy style. The fruit is a tight head of one-seeded achenes, each with a silky tail an inch long, formed by the much elongated hairy style.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—A flowering plant. Fig. 2.—A fruiting head with involucre. Fig. 3.—A mature leaf.



BEGONIA PELTATA

(Plate 763)

BEGONIA PELTATA

Native of Southern Mexico

Family BEGONIACEAE — BEGONIA Family

Begonia peltata Otto & Dietr. Allg. Gart. **9**:58. Feb. 1841.
?*Begonia incana* Lindl. Bot. Reg. **27**(misc.):39. May 1841.

Among horticulturally important plant groups, begonias rank exceptionally high, both from the viewpoint of ornamental foliage and ornamental flowers. There have been described in this genus approximately thirteen hundred species, not all of which are likely to be eventually accepted as distinct, but there will still be a great number to draw upon for greenhouse and pot-plant material.

The wild-species kind are grown mostly by fanciers and collectors, but the horticultural varieties and the hybrids, of which there are thousands of different kinds, are among the most popular of house and window-garden plants. There is, in fact, scarcely a group of window-plants in the eastern or central United States which does not contain at least one begonia.

Our present subject is one of the fibrous-rooted sorts, and since its flowers are rather dull in color, is grown for the ornament of its leaves. It is easily distinguished from all the other kinds of begonia in cultivation by its thick, fleshy, peltate, white- or grayish-felted leaves. It was introduced into European greenhouses about 1840 from Mexico, and is still somewhat uncommon in cultivation, being seen only in fanciers' collections. It grows well in a soil of two parts loam, one part leafmold, one part well-rotted manure, and one part sand.

Begonia peltata is a fibrous-rooted, somewhat succulent plant one or two feet tall. The stems, leaves and flower stalks are covered with a scurfy, whitish wool. The leaf-blades are four to nine inches long, obliquely orbicular-ovate with a shallowly repand-crenate margin, tapered abruptly to a short tip, rather thick and fleshy in texture, peltately attached off-center to the long petioles. The flowers are white, in large-forked clusters on stalks six to nine inches long, the petals and ovary with a thin covering of white hairs. The male flowers are about an inch across, with two large rounded outer parts, and two narrowly oblong inner parts. The cluster of stamens is bright yellow. The pistillate flowers have a three-angled and winged ovary about one-half inch long, one of the wings slightly narrower than the other two; on top of the large ovary are two or three rounded petals about one-fourth

inch long, the third petal, when present, is small and narrowly oblong. The fruit is a three-winged capsule formed by the slightly enlarged ovary and filled with minute tan-colored seeds.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Portion of an inflorescence. Fig. 2.—Leaves, to show upper and lower surfaces.

COREOPSIS LINIFOLIA

(Plate 764)

COREOPSIS LINIFOLIA

Native of Southeastern United States

Family CARDUACEAE THISTLE Family

Coreopsis linifolia Nutt. Jour. Acad. Phila. 7:75. 1834.

On the hot, steaming savannas of the southeastern Coastal Plain, live some of the showiest of eastern American wildflowers. There, from early spring until well into the fall, there is a constant parade of one kind of flower after another, many of them occurring in large drifts or carpets, extending over wide areas, matched only by the surpassing displays of wildflowers on the west coast. These eastern mass effects reach their climax during the midsummer heat, when both temperature and insect pests also reach their climax, and so are usually unseen by the average flower-lover, who avoids the low country at that time. Since yellow is one of the most common of flower colors, it is only to be expected that some of the large displays will be of that color, and there are several kinds of *Coreopsis* that occur in just such a way. Our present subject is one of them, in fact, it is the tallest, so that an area of it swept by the wind, quivers in golden ripples to its passing. This species differs from other closely related ones in its rather short, but narrow, undivided leaves, its greater height, and somewhat smaller individual heads. Its tall, few-branched stems, and somewhat tender nature are not suited for general garden purposes, although it may be grown under cool greenhouse conditions. Therefore, it is one of our wildflowers best enjoyed in its own home by those who are sufficiently hardy-souled to visit it.

Coreopsis linifolia is a smooth perennial herb up to two and one-half feet tall, with slender corymbosely-branched, angled stems. The lower leaves are alternate, the upper ones opposite, all with hardened, untoothed margins; the lower ones spatulate to oblanceolate, shorter than the internodes or occasionally twice as long, one and one-half to five and one-half inches long, rounded at the tip and tapering at the base into petioles up to one and a half inches long; the upper ones linear, not petioled, varying from mere slender scales to two inches long. The flower-heads are borne on slender stalks one and one-half to two inches long; at full expansion an inch to an inch and one-fourth across. The involucre is in two series; the outer series consisting of six to eight ovate to lanceolate, striate bracts, less than one-eighth inch long, with scarious edges and blunt tips; the inner series

consisting of six to eight ovate, striate bracts one-eighth to one-fourth inch long, with scarious edges and acutish tips. The ray-florets are usually eight in number, deep chrome-yellow, about one-half inch long, three-lobed at the apex. The chaff of the receptacle is spatulate and blunt. The disk-florets are brownish-purple, about one-eighth inch long. The achenes are oblanceolate, about one-eighth inch long with an irregularly-toothed wing.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.— Top of a flowering stem. Fig. 2.—Base of stem and a basal leaf. Fig. 3.—Disk floret X4. Fig. 4.—Chaff of the receptacle X4.

GREVILLEA ALPINA

(Plate 765)

GREVILLEA ALPINA

Alpine Grevillea

Native of the Mountains of Victoria, Australia

Family PROTEACEAE PROTEA Family

Grevillea alpina Lindl. in Mitch. Three Exped. Austral. **2**:178. 1838.

To us in the northern hemisphere, the members of the Family Proteaceae, named after the mythological and multiformed sea-god Proteus, are a strange lot of plants, seeming out of this world in their weird floral structure. Some appear like giant thistles or colored artichokes, some like colored pine cones covered with stamens; some like odd little hooks twisting into various contortions, and probably most fantastic of all, the weird firewheel flowers of the Queensland tulip-tree, *Stenocarpus sinuatus* (Add. Pl 281). All have the queer, four-parted flowers consisting only of a colored calyx, with the stamens either fastened to the tip of the lobes, or long protruding, and in most of the genera the four calyx lobes are twisted into one odd form or another. Nearly all of the genera are confined to the southern hemisphere, in South Africa, Australia and adjacent islands, a few occur in southern South America, and still a few others cross the Equator into the East Indies and into southern Japan and southeast Asia. They are, of course, a prominent feature of the Australian and South African floras.

The genus *Grevillea,* containing about two hundred species, is confined to Australia and New Caledonia. One large tree species, *Grevillea robusta,* the silk-oak, so named because of its hard, silky-grained wood, is frequently seen as a street tree and in yards in southern California, one of the few parts of the United States where these plants can be grown with any degree of perfection.

Our present subject is a shrub, as are most of the species, and may be grown in a cool greenhouse in the eastern United States, where, at a fairly small size, the ends of the branches are strung with the odd pink and yellow flower spikes. The plant is restricted in the wild to the higher altitudes of the mountains of Victoria in Australia, none of which quite reach five-thousand feet in altitude. It grows in large thickets, sometimes a shrub six feet tall, sometimes low and sprawling, always well decorated with flowers and intricately branched.

Some other species of *Grevillea* also make good pot-plants and flower

when fairly small, the best known one being *G. Thelemanniana.* Its pink flowers tipped green, and scattered among its finely dissected leaves, are quite attractive, and add a distinctive note to any greenhouse collection. It is scarcely known in the East, however, but is frequently seen in California.

The name, *Grevillea,* commemorates Charles F. Greville, English patron of botany.

The alpine grevillea is a much-branched shrub of varying form, sometimes prostrate, sometimes up to six feet in height with spreading branches, clothed with a dark brown bark, mostly close-fitting, but somewhat loose-scaly on the older stems and branches, the twigs covered with dense, spreading hairs. The leaves are evergreen, rather crowded, stalkless or nearly so, oblong-lanceolate to linear, one-half to one inch long, the margins tightly revolute, the blades dark green, hairy or scabrous on the upper surface, with a dense, silky wool on the underside. The flowers are borne in short, stalkless racemes at the ends of the twigs, the rachis and lower stalks densely hairy. The perianth consists of a highly-colored calyx, one-third to one-half inch long, strongly recurved above the middle, inflated on the upper side near the base, woolly outside and bearded inside to below the middle, red to deep pink on the lower half, becoming white to yellowish on the upper half; the four lobes valvate in bud, the two outer ones larger than the two inner ones, each expanding at the apex into an ovate concavity in which is seated a stalkless stamen. The ovary and style are densely hairy. The stigma is a large discoid body peltately attached on the upper tip of the style. At the base of the ovary is a large gland which projects into the inflated base of the perianth. The fruit is a dark brown, hairy, ellipsoid follicle about one-half inch long, long-beaked with the persistent style, and splitting on one side to expel the one or two dark brown, ellipsoid seeds.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—A flowering twig. Fig. 2.—An outer perianth segment X2. Fig. 3.—An inner perianth segment X2. Fig. 4.—Gynoecium X2.

PENSTEMON COBAEA

(Plate 766)

PENSTEMON COBAEA

Cobaea Penstemon

Native of Central United States

Family SCROPHULARIACEAE FIGWORT Family

Penstemon Cobaea Nutt. Trans. Am. Philos. Soc. II. **5**:182. 1837.

One of the great gifts to horticulture of the North American continent is the genus *Penstemon,* containing some three hundred species, all but one of which is restricted to that continent. It is probably the largest genus of showy wildflowers in the world, with a wide range of color variations through all tones of pink, red, rose-purple, purple violet-blue, and blue, with only a few creamy yellows and one bright yellow. In plant habit, it ranges from low-tufted alpines to large shrubs and a few vining types. But few species occur in the eastern half of the continent, the number increasing westward, with the main concentration of species in the Rocky Mountains and the Pacific States. The inflorescences are for the most part large and showy, the flowers varying in size, but always freely displayed. Nearly all of the species are good garden subjects, especially within their native area, but many are adaptable in other areas, although it requires experimentation to find which ones will prove satisfactory in any given region.

Our present subject is one of the two largest-flowered species, the other one being *P. grandiflorus,* which, while it is probably more colorful, has a very short flowering period of slightly over a week, while *P. Cobaea* lasts in bloom for nearly a month. Neither one does well west of the Rockies, and *P. grandiflorus* is more prone to die after flowering, even in its native area. Both are inhabitants of the prairies and plains, where they grow in well-drained locations, *P. Cobaea* being the more restricted in its natural range, which is from Nebraska to Texas.

The cobaea penstemon is a perennial herb one to two and one-half feet tall, arising from a short, stout rootstock. The stems are covered with a fine, close down, which becomes more dense upward into the inflorescence. The leaves are pale green. The lower leaves are oblanceolate to oblong-lanceolate, the upper ones ovate and cordate-clasping, all prominently sharp-toothed and minutely downy. The flowers are borne in a thyrsoid panicle three to ten inches long, the main axis and flower-stalks downy with soft

hairs. The calyx is three-eights to one-half inch long, its five lobes lanceolate and densely downy. The corolla is one and one-fourth to two inches long, the outside covered with fine down, usually pale pinkish lavender with purple streakings inside, but varying from white to pale purple, the tube a little longer than the calyx, abruptly inflated into the bell-shaped throat, somewhat two-lipped, the free lobes spreading. The four fertile stamens are arched into the upper part of the throat in two pairs, one pair longer than the other. The filaments are slender and whitish, the anthers not hairy, at first reddish-brown, becoming nearly black after the pollen is shed. The sterile fifth stamen is flattened club-shaped, yellow and bearded, lying in the throat of the corolla like a tongue. The pistil consists of a two-celled ovary, a long, upcurved style, and a capitate stigma. The fruit is a two-celled capsule with a hard shell, splitting to expel the many, light brown, wingless seeds.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—Cauline leaves. Fig. 3.—Basal rosette leaf. Fig. 4.—Corolla, laid open. Fig. 5.—A stamen before anthesis X2. Fig. 6.—A stamen after anthesis X2. Fig. 7.—Capsule.

PENSTEMON COBAEA PURPUREUS

(Plate 767)

PENSTEMON COBAEA PURPUREUS

Ozark Penstemon

Native of the Ozark Mountains, Missouri and Arkansas

Family SCROPHULARIACEAE FIGWORT Family

Penstemon Cobaea var. *purpureus* Pennell, Proc. Acad. Phila. **73**:400. 1921.

The Ozark variety of the cobaea penstemon is one of the most beautiful of the purple-flowered penstemons, and a splendid garden plant for the central and eastern United States. It does not do well in the West. Quite a rare plant in the wild, it is known only from a small area in the Ozark Mountains of southern Missouri and northern Arkansas, where it grows on rocky limestone barrens and cliffs. It differs most markedly from the species in the consistently royal-purple of its flowers, and takes a little more kindly to cultivation in the East than does the paler colored typical variety. As with all penstemons, a good drainage is essential, and, in case a plant blooms so heavily that it exhausts itself and does not survive the following winter, there should always be on hand a quantity of seedlings to carry on. Since seed is freely produced, there should be no difficulty on this score.

Penstemons as a group are a particularly fine addition to American gardens, and should be much more popularly grown, for many of them have long blooming seasons, some even in a period when other showy plants are scarce, and their ability to stand dry periods, when so many plants dry out, renders them of great value in regions of low summer rainfall. The pioneer work of the American Penstemon Society in making these plants popular and available to gardeners is extremely praiseworthy, and is already producing favorable results in many parts of the country.

The Ozark penstemon is a perennial herb, one to two and a half feet tall, its stems arising from a short, stout rootstock. The stems are covered with short, soft hairs which become more dense on the axis and branches of the inflorescence. The leaves of the basal rosettes are oblanceolate to obovate and petioled; the lower stem leaves are lanceolate to narrowly oblong-elliptic, the upper ones ovate with cordate-clasping base, all finely downy, medium green in color, and with the edges sharply and prominently toothed. The flowers are borne in a thyrsoid panicle, three to ten inches long. The softly hairy calyx is about one-half inch long, the lobes lanceolate, often

broadly so. The corolla is downy outside and slightly glandular inside, deep purple with black-purple markings inside the throat and on the wide-spreading lobes of the two lips. The corolla is less inflated and therefore more slender in this variety than it is in the species. The four fertile stamens are arched in pairs of unequal length into the upper throat, the slender filaments white, their anthers brown. The sterile fifth stamen is pale yellow, with yellow beard on the upper portion, white with white beard on the lower portion. The style is long, slender and upcurved, with a capitate stigma. The capsule is about one-half inch long, two-celled, and filled with light brown seeds.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Inflorescence. Fig. 2.—A cauline leaf. Fig. 3.—Corolla, laid open. Fig. 4.—A capsule.

DIMORPHOTHECA ECKLONIS

(Plate 768)

DIMORPHOTHECA ECKLONIS

Native of South Africa

Family CARDUACEAE THISTLE Family

Dimorphotheca Ecklonis DC. Prodr. 6:71. 1837.
Osteospermum Ecklonis (DC.) Norlindh, Stud. Calend. 1:244. 1943.

The great Family of Composites, one of the world's largest aggregation of flowering plants, contains some of our most familiar and well-loved garden flowers. Among these are dahlias, asters, chrysanthemums, sunflowers, goldenrods and "daisies," to mention a few. Some of the South African "daisies" are to be classed as exceedingly desirable garden plants where they can be grown out-of-doors, as in the American Southwest, or indoors in other regions, for their winter and early spring bloom. One of these groups, the genus *Dimorphotheca,* contains a splendid range of colors in shades of yellow, orange, white, blue and purple. Since these South African "daisies" are "sleepers," that is, flowers that close up on gloomy days and at night, the fact that the underside of their "petals" which are in reality ray-florets, are usually of the same color as the inside, but streaked with blue or purple, renders them colorful open or closed. Many of the species may be used as border annuals, flowering early from winter-sown seeds indoors, and moved into the border when danger of frost has passed. Our present subject, being a shrub, is best handled in the east as a cool greenhouse plant. The species is named in honor of C. F. Ecklon, apothecary and botanical collector, who first collected the plant in South Africa.

This species is intermediate between the two genera *Dimorphotheca* and *Osteospermum,* with the flower size, color and general aspect of one genus and the sterile disk-flowers of the other. It seems best here to retain it in the genus in which it was originally, though doubtfully placed.

Dimorphotheca Ecklonis is a weak-stemmed subshrub, two to four feet tall, its stems much-branched above. The leaves are obovate to oblanceolate, with rather distant, large, irregular teeth, glandular-hairy, two to four inches long. The flower-heads are terminal on short, hairy stalks four to six inches long. The involucral bracts are glandular-hairy, linear-acuminate, scarious-margined, about one-half inch long. The heads, when expanded, are three to four inches across, the ray-florets narrowly elliptic to oblong-lanceolate,

white with a blue-violet base on the upper surface, white with light blue-violet streakings on the under side, pistillate and fertile, the two-branched style purple. The disk-florets are five-sixteenths inch long, including the sterile ovary, staminate, with a capitate stigma; the tube purple, its lower half hairy; the lobes spreading, steel-blue. The ray-achenes are oblong, three-angled, shallowly three-tubercled at the apex; the sides finely wrinkled, the outer side convex and more prominently wrinkled.

EDWARD J. ALEXANDER

EXPLANATION OF PLATE. Fig. 1.—Flowering heads, front and back view. Fig. 2.—A ray floret. Fig. 3.—A disk floret in bud X2. Fig. 4.—A disk floret at anthesis X2. Fig. 5.—A leaf.

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Bold-face type is used for the Latin names of plants illustrated; SMALL CAPITALS for Latin names of families illustrated and for the names of the authors of the text; *italics* for other Latin names, including synonyms.

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